AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 125 No. 11
WHOLE No. 3023

NEW YORK, SATURDAY, MARCH 12, 1927.

Subscription, $3 Per Year
$4 Canada $5 Foreign

Cutting Costs
with
Pittsburgh Terminal Special
Coal *for* Water Gas Generators

The Original
"SAW MILL RUN"
Gas Coal

THIS specially sized Terminal product has a structure like anthracite, minimizing handling and storage losses.

Its low sulphur content greatly reduces cost of gas purification.

A low ash coal of high fusibility, assuring maximum B.t.u. value and lowest generator cleaning cost.

High in volatile matter, producing an exceptionally rich yield of high calorific value gas.

Our Gas Engineer will be glad to tell you more about this perfect bituminous generator coal.

2nd NATIONAL BANK BLDG. TOLEDO, OHIO

PRUDENTIAL BUILDING BUFFALO, N. Y.

No. 1 BROADWAY NEW YORK CITY

THE NORTH AMERICAN COAL CORPORATION

UNION TRUST BLDG. CLEVELAND, OHIO

2nd NATIONAL BANK BLDG. AKRON, OHIO

WABASH BLDG. PITTSBURGH, PA.

CANADA COAL LTD. TORONTO, ONTARIO, CANADA

Advertising Index, page 89

Index to Contents, page 4

Koppers Material Handling Plants

IN their need for efficient, uninterrupted service, By-Product Coke and Gas Plants and Central Power Stations make exacting demands on material handling plants.

Koppers installations in actual service in many of these plants, are satisfying the rigorous conditions imposed. Rugged and dependable — they prepare, transport and store millions of tons of fuel annually.

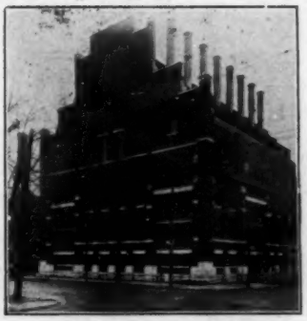
A department of the Koppers Construction Company specializing in the handling of materials, invites inquiries from companies with material handling problems.

The Koppers Construction Company

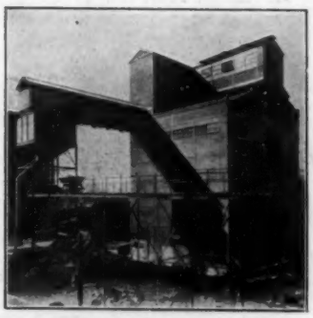
Designers and Builders of
BY-PRODUCT COKE AND GAS PLANTS

Chicago Pittsburgh New York

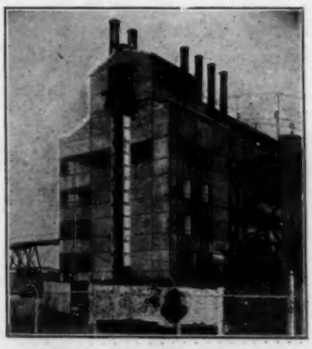
GLOVER-WEST
Vertical Retorts



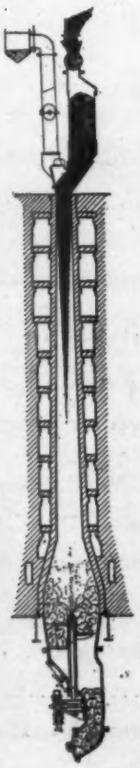
Toronto, Ont.
5,000,000 cu. ft. per day

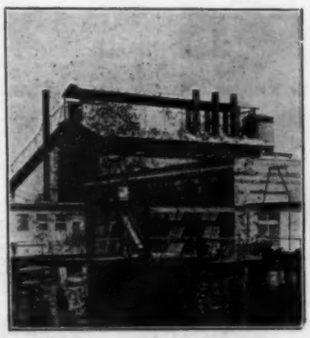


Fargo, N. D.
800,000 cu. ft. per day



Portland, Me., 2nd Plant
750,000 cu. ft. per day





Fall River, Mass.
1,600,000 cu. ft. per day

Plants *Completed* in 1926

Also Completed—Stamford, Conn., 1,100,000 cu ft.; Buenos Aires, 3,500,000 cu. ft.

Under Construction

Springfield, Mass.	2,800,000 cu. ft.	Santiago, Chile	3,000,000 cu. ft.
Toronto, Ont.	600,000 cu. ft.	Pawtucket, R. I.	1,060,000 cu. ft.
		Faribault, Minn.	400,000 cu. ft.

WEST GAS IMPROVEMENT CO.
Builders of Coal Gas Plants
441 Lexington Ave. New York.

American Gas Journal

SIXTY-SEVENTH YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. and Treas. C. S. MYERS, Vice-Pres. A. M. GLEASON, Sec'y

STANTON G. KRAKE, Managing Editor HENRY M. RILEY, Editor

ISMAR GINSBERG, Associate Editor

"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

Contents of This Issue

Building Business By Calls After Range Sales Are Made—Frank H. Williams 255

Lure 'Em With Aluminum—W. B. Stoddard 257

Changeability of Gas in Mains—Dr. E. Ott 259

Increasing Revenue By Decreasing Unaccounted-for Gas—Harry Ellis 262

Outline of Activities of the Technical Section, A. G. A. for the Year 1927—Walter C. Beckjord 264

As the Journal Views It 267

Industrial Gas Lesson—Lesson No. 160 269

Ideas for the Man Who Sells—William H. Matlack 271

More in College, Fewer At Work 273

A Gas Company's Spring Opening 273

Progress in Gas Technology 274

News of the Gas Industry 276

Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL, March 12, 1927. Vol. 126. No. 11. Published weekly by American Gas Light Journal, Inc., New York, N. Y. Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS JOURNAL
Established 1859— Pioneer of the Gas Industry

Vol. 126. No. 11. **NEW YORK, MARCH 12, 1927.** **Whole No. 3623.**

Building Business by Calls After Range Sales Are Made

How good-will is developed and additional sales made

Frank H. Williams

HERE's something that happened recently which will be of interest to all managers of appliance and range departments of gas companies:

A woman who had purchased a range from the gas company in her city was talking to a friend about her purchase.

"The range is fine," said the woman, "and I liked it a lot at first, but lately I've been getting out of sorts with it. I don't think there's anything at all wrong with the range—I think the entire trouble is with me. You see, before I bought the range the representative of the gas company was after us all the time to get us to buy and he certainly was nice in giving me cooking recipes and in telling me how to get the most out of the range in case we bought it and all that sort of thing. I thought sure that when we bought the range the representative would do even more for us. But do you know what happened just as soon as the range was installed? He never came near our house again and he just barely bows to me when he sees me at the gas office when I go down there to pay my bill; the company hasn't done a single thing for us since we bought the range. It doesn't even send us a bill for the monthly installments. It even makes us remember about paying them, too. It just makes me think that the company was simply trying to put the sale over and that it doesn't really care a whoop about us after all."

Isn't the gas company passing up a splendid opportunity for getting more business by neglecting to make any calls on customers after the customers have purchased ranges?

How the Auto Dealer Follows Up

Consider what some automobile dealers do with this thing of calling on customers after sales have been made.

With some auto dealers a representative is sent around to call on the purchaser of a car about thirty days after the car has been delivered to the purchaser.

When the representative makes this call he says something like this to the purchaser:

"I'm representing the A. B. C. Automobile Company from whom you bought your car a month ago. I'm calling to find out how the car is running and if there are any adjustments that need to be made and if there is anything we can do to help you in getting even more service and enjoyment from your car."

Of course the car owner is much pleased by this attention with the result that any little irritation he might have been feeling about some points regarding the car is just about wiped out.

"The car is going along fine," the owner says, "but I'm having a little trouble in starting it in the mornings. I wonder if there is anything that might be done to make it start **more easily?**"

Whereupon the representative tries out the car and, perhaps, makes an adjustment right on the spot which helps things greatly. Or, perhaps, the dealer suggests that the owner take the car into the company's garage and have an adjustment made there.

"Thanks a lot," the owner says, after this. "I sure appreciate your coming around like this."

A Part of the Business

"Oh, it's part of the business," the representative says frankly. "I come around not only for the purpose of helping you get more pleasure and service out of your car, but also for the purpose of seeing if you can't give me the names of some live prospects. Maybe some of your friends or relatives have been so much impressed by your car that they'd like to have similar cars. Can you recall anyone of that sort?"

This makes the car owner anxious to do something for the representative and so the result is that the owner probably digs up a name or two for the representative and the latter calls on these people and, perhaps, makes sales to them.

All of which is mighty good business for the automobile dealer.

And the same sort of thing would, surely, be equally good for the gas company in selling more ranges.

About thirty days after the installation of a range in a home the representative might call on the owner —some companies are already doing this, it should be stated here—and the representative might then say something like this to the housewife:

Good Sales Talk

"I'm from the gas company. We always make calls on new range owners about a month after the ranges have been installed for the purpose of seeing if the ranges are giving complete satisfaction and for the further help of seeing whether or not we can do anything to help the folks in getting more satisfaction and comfort from their ranges.

"How is your range doing," the representative can then add. "Are you doing any cake baking on the range or haven't you tried anything of that sort yet?"

These questions would make the housewife tell all about the cooking she was doing and so would give the representative a splendid line on just what was being demanded of the range. And in this way he could see whether or not the housewife was handling the range in the right way or whether she was making some mistakes about its management. Of course, if it developed that the housewife was making some mistakes in the operation of the range, then the representative could at once correct such mistakes. Or if the housewife were using the range in only a limited way then the representative might show her how to get more out of her range.

After doing all this the representative might say something like this:

Cook Book Might Help

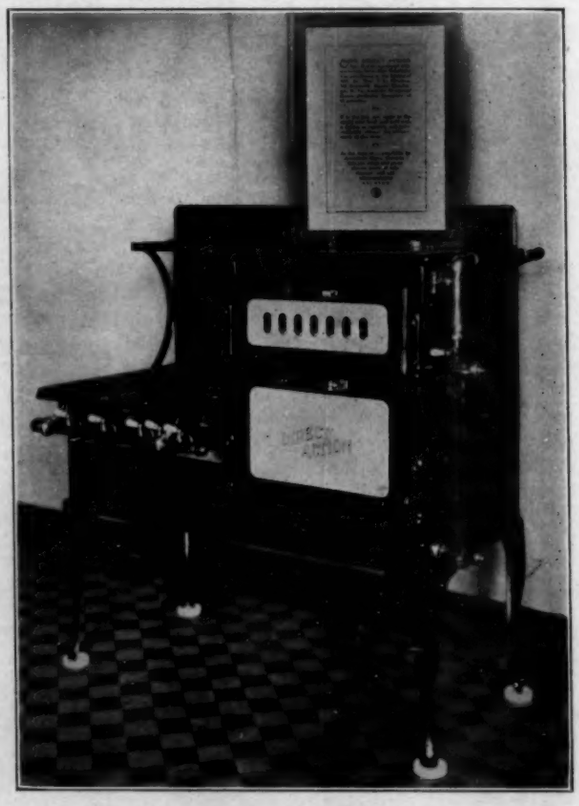
"If you haven't one of our latest cook books I'll leave one for you. And I'll be glad to take around copies of this cook book to any of your friends or relatives who might be interested and who may be thinking of buying ranges just like yours, since seeing how well your range is doing for you. That's another object of my call—to try and secure the names of some live prospects from you. Of course, the people who have been much impressed by your range will be quite likely to want the same sort of ranges for themselves and so it would be a good proposition for me to go around and call on them."

In this way the representative would, in many cases, secure names and addresses of good prospects and when he called on these prospects he would probably be able to make sales to some of them.

Of course, too, all prospects whose names and addresses were secured in this way would be quite apt to give a more attentive hearing to the company's representative than almost any other class of prospects. This would be the case because the representative would, naturally, introduce himself as having secured each prospect's name from the range owner who was mentioned as being a friend or relative of the prospect. This sort of an introduction would make the prospect want to do as much as possible for the representative and would, therefore, make it quite likely that if the prospect did not buy a range the prospect would, at least, give the representative the names and addresses of some other people who might be good prospects for him.

Surely no time put in by the company's representative in this way would be wasted because such calls would make warmer friends for the company of all range owners and the calls, also, might result in the making of sales that, otherwise, might not be made.

So why not institute this sort of thing in selling ranges right now and why not cash in on it to the fullest possible extent?



A HISTORY-MAKING GAS RANGE

Some eleven years ago one of our good American housewives purchased a direct action range. We are advised that this woman loved to cook and did cook a great deal. As a consequence this appliance enjoyed no lengthy vacations.

Original Heat Controlled Range

This range, a product of the American Stove Company, was the first gas range ever built and sold that was controlled by a device to regulate the heat of the oven. It is the pioneer of an appliance that has done much to lessen cooking worries.

The range is still in excellent condition and the Lorain Oven Heat Regulator on the same works just as accurately as a new one would.

It is of interest to note that the American Stove Company has repurchased this range for its historical value and it is now on display in the above company's factory.

Lure 'Em with Aluminum

Display of utensils draws customers inside

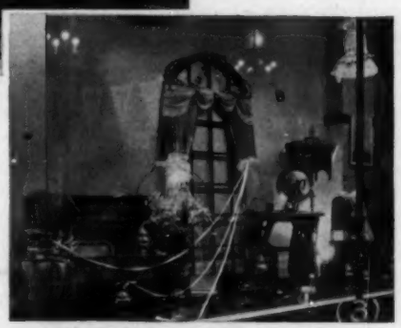
by

W. B. Stoddard

(1) *Peoples Gas Light and Coke Company, of Chicago.*

(2) *Beacon Gas Light Company Los Angeles.*

(3) *Laclede Gas Light Company, St. Louis.*



A CONSIDERABLE portion of gas range sales comes from newlyweds who are just starting up housekeeping. In the larger towns the range sales are pretty evenly divided between newlyweds, those sold to replace wornout equipment; and those sold to equip houses in new territory to be served by gas mains. It has been found to be an actual fact that the featuring of up to date equipment for the kitchen makes the people think of up to date fuel and cooking. Grandmother didn't have aluminum and pyrex ware, kitchen cabinets and iceless refrigerators. She used heavy iron pots and kettles and walked innumerable steps around her big, sparsely furnished kitchen. And grandmother used much valuable strength shoveling in coal and wood with which to do her baking. But when Miss 1927 makes a cake in her aluminum pans, so easy to handle and to clean, she wants to bake it in a stove that has even heat, and that "bakes the cake and not the cook." Naturally, she cooks with gas. The fuel suggests the modern utensils—the modern baking dishes suggest the perfect fuel.

Unnecessary to Carry Wide Variety of Utensils

It is not necessary for a gas company to carry a wide variety of cooking utensils. On the contrary, the lines can be carefully selected. But these cooking utensils should be on display at all times and given a prominent position in the salesroom. Only the highest grade should be carried by the gas company, and many manufacturers will co-operate in seeing that he gets the right line. Of course, the best one to preside over this salesroom is a woman—and it should be one well versed in the arts of cooking, so that she can talk intelligently to housewives regarding the different kinds of ware best for the preparation of certain dishes.

The Peoples Gas Company, Chicago, has gone into these lines quite extensively. Almost every woman who comes to buy a stove is attracted to the bright new utensils displayed so attractively and adds some to her stock. In the case of a bridal couple the sale is almost doubled very frequently, as the entire aluminum outfit is bought at the time the stove is purchased. In order to display the line in the atmosphere in which it would be used they fitted up a model kitchen, showing a wall cabinet filled with pyrex and aluminum. A card beside it suggested: "This cabinet is properly stocked with efficient kitchen utensils. Look them over and see if they are not just what you wish."

They frequently arrange window displays to feature their different lines of cooking utensils and an aluminum display recently was responsible for many sales. Curtains of olive green silk draped the walls and a long table held a three panel lithograph supplied by the manufacturers. On this table was a

complete set of aluminum ware. Two cards suggested:

(1) Mirro reflects good housekeeping and the bride's good judgment.

Have You Been Invited to a Wedding?

(2) Aluminum made up into sets to suit different tastes and purses is suggested as a much appreciated gift.

Seven mounds covered with green silk each held a single aluminum utensil, while on the floor down front was a varied collection of aluminum pieces.

Beacon Gas Light Co.'s Window

The Beacon Gas Light Company, Los Angeles, Cal., which recently retired from business after a long and successful career, last spring arranged a window that instantly appealed to all brides, and those in search of wedding gifts. Against the rear wall was a black latticed window hung with lemon hued curtains and adorned with sprays of orange blossoms. An open cedar chest against the wall was packed with nested aluminum, and on a chair was a percolator partially divested of its tissue wrappings. A tall basket was filled with white lilies and foliage. White ribbons ran from a card on the table to gifts scattered over the floor. Inside the store were two tables covered with white satin scarfs with long bows and streamers of broad pink ribbons. On one of the tables was set all manner of aluminum utensils, each article having a little price card, while on the other were shown several complete sets, nested, selling for $45 each. On a stand between the tables was a stand holding a number of cards and envelopes, with a card advising: "Ask the salesman to give you a greeting card and envelope for sending your gift message."

Laclede Company Features Variety of Kitchen Wares

The Laclede Gas Light Company, St. Louis, feature all kinds of kitchen equipment and wares. They have a special demonstration room in charge of a domestic science expert, where cooking classes are held each day. Of course, all the modern kitchenware is used and regular attendants soon get so accustomed to seeing pyrex and aluminum used that they begin to consider them the only proper ware for certain dishes. They advertise this cooking class at regular intervals.

In addition to the cooking school in the auditorium they very frequently fit up one of their large windows as a kitchen, and here one of their demonstrators will make cake, or pie, or fancy salad, to the interest of the outside throngs. She is always surrounded by a goodly array of efficient cooking utensils in which aluminum plays no small part.

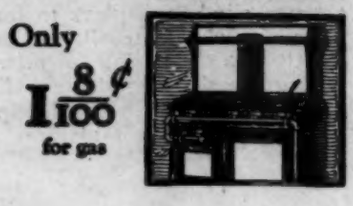
Display of a single line are often made and their aluminum window of last fall was a thing of beauty —as well as utility. There was a big arch gilded and carved, back of which hung heavy velvet curtains. Drapes of gold hued velvet were flung across the floor and on them were laid a number of small pieces of aluminum. On tall pedestals were set single pieces, such as kettles, percolators, fancy moulds, etc. Roasters, waffle irons, double boilers, gem pans and other utensils were grouped on low stands at each side of the display, and cards of green and gold suggested:

A splendid complete line of aluminum for gifts of highest quality.

Is your kitchen properly equipped with aluminum for better, easier cooking?

Take the only man with you and together pick out some of these conveniences for your new nest.

Where Six Cents of the Family Dollar Go



An interesting pictorial tabulation was published by the General Electric Company by way of an advertisement in Public Service Management, the same being reproduced herewith.

The figure of one and eight-tenths cents for gas used in the average home should be of considerable encouragement to the gas industry as a whole. It should readily dispel any idea that the average housewife is spending any considerable sum for this very necessary commodity. At the same time it would seem that Mrs. Average Housewife could very readily, and without much straining of the family pocketbook, add a couple of tenths of a cent to the prevailing figure and further lighten the manifold duties of running her home.

Changeability of Gas in Mains

An investigation of thermal value and other properties in distributing gas under low pressure

Dr. E. Ott

Monats Bulletin, 1926, 101-6.

THE experiments which are described in this article were carried out during the months of October and November, 1924, in gas mains located in the City of Zurich, Switzerland. There were three series of experiments and tests, which are differentiated in the following as the preliminary, principal and secondary sets. The preliminary and principal sets of experiments were carried out over a period of one and one-half hours at one and the same time over a stretch of the Zurich gas main, 6,218 meters in length. These tests were followed by the secondary set, which were in the nature of a corroboration of the first two sets. The purpose of the first two sets of experiments was to determine the accuracy of formulae used in calculating the flow of gas in mains. The secondary series of experiments lasted over a period of six and one-third hours, and this set was instituted for the purpose of clearing up certain discrepancies and disagreements in the first two series of experiments. The difference between the third and first two sets of experiments lay principally in the fact that the third series were carried out over the entire stretch of main, that is over a length of 13,850 meters. The average pressure during the first two sets of experiments was 810 millimeters of mercury, while that in the last series was 1,065 millimeters of mercury. A high thermal value mixed gas was distributed through this main.

Observation Points

Three points at which observations were made were established. The first point was directly before the blower, the second point directly after the blower and the third point at the end of the experimental stretch of main. The various co-efficients and properties of the gas determined in these experiments were the heating value, the specific weight, the viscosity and the composition of the gas. The observations were made simultaneously before and after the blower and at the third point in the installation only after the gas had arrived there.

The thermal values of the gas were compared with each other, the gas remaining the same, calibrated thermometers and gas meters being used. The actual testing of the gas was carried out in a Junker calorimeter and allowance was made for the water content of the gas. These tests were carried out every twenty minutes in the preliminary and principal tests and every thirty minutes in the secondary or third series of experiments. The specific gravity and the effusion of the gas were determined after each determination of the heat value, these determinations being carried out with the aid of the Bunsen-Schilling apparatus or the effusion meter. The effusion meter used was the Bunsen-Schilling apparatus with glass capillary tubes of 0.50 millimeter internal diameter and thirty centimeters length fixed in it. The apparatus were also compared with each other, that is calibrated one against the other.

Absolute Values Not Obtained

Although absolute values cannot be obtained in this fashion, for if such results are desired it is necessary to work in different fashion, comparison must be made with standardized instruments, nevertheless relatively correct results should be expected. This is, after all, the most important consideration in such investigations. It was unfortunate that certain influences existed during the determination of the heating value of the gas in the preliminary and principal series of experiments which exerted a disturbing influence on the results, and it was for this reason that a third series of experiments had to be instituted.

It must be mentioned here that it was very easy for errors to occur in a series of experiments of this nature, in spite of the greatest care that was taken to avoid them. Errors of this sort can very easily give an entirely false picture of the phenomena. It, therefore, follows that in laying out the conditions of a test of this nature great enough care cannot be exercised and the results must be interpreted with due consideration of all the factors involved in the experiments and of the conditions that existed during their carrying out. A very important factor, perhaps the most important of all, is to make comparison between experimental results, carried out in this fashion, with those obtained in other tests only when the conditions of the investigation are absolutely the same in both cases. Thus in this case not alone were precautions taken against obtaining contradictory values of the heating power of the gas but the same care was taken in the determination of the composition of the gas.

While the basis on which the discrepancies in the heating value of the gas is explained, cannot be chosen, so that it is absolutely free from all objections, nevertheless the first signs of error in the effusion apparatus were immediately traced back to the stopping up of the capillary openings due to drops of water.

Taking the Gas Samples

The gas samples which were used in making the various analyses were taken in two ways. In the first place samples were taken continuously during the entire period of the test and then a suitable sample was taken from the combined sample. In addition thereto test samples were taken at various intervals right from the mains, that is after each determination of the effusion of the gas. In taking continuous samples of the gas, the liquid used to seal the apparatus was mercury. On the other hand, the apparatus was not provided with a sealing liquid when the momentary sample was taken. The sample in this case, after the pipettes had been well blown out, was caught in this device. But for the fact that the pipettes are liable to break, it is possible that this method of sample taking could serve in the place of the continuous method, but the discontinuous method should nevertheless not be used for this purpose. The analysis of the gas was carried out in accordance with methods which are in everyday use in the laboratories of the Zurich gas works. It should be mentioned in passing that a test was made to determine the tightness of pipettes which were provided with two stop-cocks which had been well lubricated with vaseline. It was found that the pipettes remained tight over a period of one year. The results that were obtained on the heating value, the specific weight and the effusion of the gas are given in Tabulation I.

Calculating the Heating Value

The heating value of the gas was calculated on the following assumptions. The heavy hydrocarbons are supposed to consist in the sample taken before the blower of about one per cent benzol vapors and the rest ethylene. As far as the ethane is concerned, experiment indicated that it should be set equal to approximately one and one-half per cent. The use of this figure, while it may not permit the attainment of absolutely accurate results, nevertheless allows results to be calculated which are at least comparable. The following thermal values of the various ingredients of the gas were used in calculating the heating value and the figures are given in every case in calories per cubic meter under standard conditions of temperature and pressure, namely, zero degrees C. and 760 millimeters mercury pressure.

TABLE I.

	Maximum and Minimum Heating Values, 0° C, 760 mm., Hg.					Specific Weight					Effusion of Gas				
	Before Blower	After Blower				Before Blower	After the Blower				Before Blower	After the Blower			
*Preliminary Test 1 Hour, 20 Minutes	(1)	(2)	Difference	(3)	Difference	(1)	(2)	Difference	(3)	Difference	(1)	(2)	Difference	(3)	Difference
1. Gas pressure, 50 mm. water	4910	4965	+55	5030	+120	.....	0,451	.....	0,451	.....	.....	0,727	.....	0,711	.....
2. Gas pressure, 821 mm. Hg.	4385	4415	+30	4515	+130	.....	....	.....	....	.....	.....	....	.....	....	.....
3. Gas pressure, 80 mm. water															
*Principal Test 1 Hour, 29 Minutes															
1. Gas pressure, 50 mm. water	5025	4955	—70	5100	+ 75	0,450	0,441	—0,009	0,445	—0,005	0,724	0,719	—0,005	0,714	—0,010
2. Gas pressure, 800 mm. Hg.	4495	4410	—85	4575	+ 80	.....	....	.....	....	.....	.....	....	.....	....	.....
3. Gas pressure, 80 mm. water															
Average of Both Tests	4907	4960	— 7	5065	+ 98	(0,450)	0,446	(-0,004)	0,448	(-0,002)	(0,724)	0,723	(-0,001)	0,713	(-0,011)
	4440	4412	—28	4545	+105	.....	....	.....	....	.....	.....	....	.....	....	.....
**Secondary Test 6 Hours, 20 Minutes															
1. Gas pressure, 55 mm. water	5040	5025	—15	4990	— 50	0,435	0,441	+0,006	0,432	—0,003	0,706	0,713	+0,005	0,711	+0,003
2. Gas pressure, 1065 mm. Hg.	4495	4486	— 9	4464	— 31	.....	.....	....	....	.....	.....	....	.....	....	.....
3. Gas pressure, 110 mm. water															

1, 2 and 3 indicate points at which observations were made; thus 1, before the blower; 2, after the blower, and 3, at end of main.

* Rate of flow of gas in preliminary and secondary tests = 571.7 cubic meters per hour, 0° C, 760 mm. pressure (maximum rate). Average rate 300-320 cubic meters per hour.

** Normal flow of gas approximately 300 cubic meters per hour. All figures enclosed in brackets are not average figures.

Preliminary Series of Tests

The first series of tests to be considered is the preliminary series. The first determination was the heating value of the gas. The heating value of the gas was found to be considerably greater after the blower than before this apparatus. This value was 55 calories at the maximum calorific value and 30 calories at the minimum heating value of the gas. There was still a greater increase, namely 130 to 130 calories, in the case of the determination made at the third point in the main at the end of the experimental stretch.

The differences lie outside of the realm of customary experimental error. However, an increase in the calorific power of the gas cannot be considered as tenable, as it is evident that one has to contend with the precipitation of vapors of hydrocarbons of high thermal value from the gas rather than with the increase of the proportion of these vapors in the gas during its distribution. The fact that no important increase in the heating value of the gas can take place is clearly shown by the figures in columns 1 and 3 of tabulation II, which indicate the exact analysis of the gas. The results are practically alike and this naturally refers as well to the heating values that are calculated from the gas analysis. The slight increase in the thermal value of the gas is due to certain unavoidable errors, or else is due to deficient equilibrium.

Thus the maximum value for benzene is 34,423, the minimum value, 32,978; the maximum for ethylene, 14,903, the minimum, 13,939; the maximum for carbon monoxide 3,034, the minimum 3,034; the maximum value for hydrogen, 3,052, the minimum, 2,570; the maximum value for ethane, 16,612, and the minimum, 14,908, and finally the maximum value for methane, 9,572, and the minimum value, 8,562.

Just to indicate how careful it is necessary to be in applying the calculated heating values that are obtained in this manner, it can be said that a difference of thirty-three to thirty-four heat units corresponds to a difference of one-tenth of a per cent

in the content of benzene by volume in the gas. This also indicates that the common technical method of analyzing gas does not give satisfactory results in this connection.

It was then necessary to determine the specific gravity of the gas and also its diffusion. It was found that the values of these constants were less behind or after the blower than they were before the blower.

TABULATION II. Preliminary Test, One Hour, 26 Minutes; Continuous Sample Taken

Gas Taken Before the Blower

Constituent	Percentage	Heating Value Max.	Heating Value Min.
Carbon dioxide	2.94	...	...
CnHm { C_6H_6 1.00	3.33	344	330
CnHm { C_2H_4 2.33	...	347	325
Oxygen	0.43	...	...
Carbon monoxide	12.86	390	390
Hydrogen	54.60	1667	1404
Methane	19.43	249	224
Ethane	1.50	1851	1663
Nitrogen	4.91	...	...
	100.00	4848	4336

Gas Taken Further Along the Gas Line

Constituent	Percentage	Heating Value Max.	Heating Value Min.
Carbon dioxide	2.93	....	....
CnHm { C_6H_6 1.04	3.37	358	343
CnHm { C_2H_4 2.33	...	347	325
Oxygen	0.47	....	....
Carbon monoxide	12.86	390	390
Hydrogen	54.63	1668	1405
Ethane	21.50	249	224
Methane	19.54	1862	1673
Nitrogen	4.70	....	....
	100.00	4874	4360

The specific gravity of the gas sample which was taken at the third point of observation in the gas main, indicated above, did not vary from that taken at the second observation point. The effusion of the gas was, however, less.

The Principal Test

The preliminary test was then followed by the principal experiment and here again the first task was the determination of the thermal value of the gas. The heating value of the gas taken at observation point 2 was found to be about seventy to eighty-five heat units less than that of the gas sampled at the first observation point, while that taken at the third point of observation was found to be from seventy-five to eight heat units higher. The results of the analysis of the gas by accurate methods must again be given in order to corroborate these observations. But in accordance with the results that are indicated in tabulation III, the thermal value of the gas remains constant. This, then, must mean that there was some experimental error in the calorimetric determinations made on the gas.

Studying Experimental Results

When a study is made of the average values found in the preliminary and principal series of experiments, it is seen that the reduction in the heating value of the gas from the first to the second point of observation in the gas main is from seven to twenty-eight units. This is, of course, possible, but the same characterization cannot be made of the fact that the heating value of the gas increased as observed in positions one and three to the extent of 98 to 105 calories. This contention is also corroborated by the average value of the heating power of the gas calculated from the results of the gas analysis. These values were as follows:

	Position 1	Position 3	Difference Between 1 and 3
Maximum heating value of the gas	4854	4868	—14
Minimum heating value of the gas	4340	4353	—13

TABULATION III. Principal Test One Hour, 29 Minutes; Continuous Sampling of Gas.

Before the Blower

Constituent	Percentage	Heating Value Max.	Heating Value Min.
Carbon dioxide	2.63	....	....
CnHm { C_6H_6	1.00	344	330
CnHm { C_2H_4	2.35	335	312
Oxygen	0.36	....	....
Carbon monoxide	12.47	378	378
Hydrogen	54.63	1668	1405
Ethane	1.50	249	224
Methane	19.81	1887	1696
Nitrogen	5.35	....	....
	100.00	4861	4345

At End of Line.

Constituent	Percentage	Heating Value Max.	Heating Value Min.
Carbon dioxide	2.63	....	....
CnHm { C_6H_6	1.00	344	330
CnHm { C_2H_4	2.35	335	312
Oxygen	0.47	....	....
Carbon monoxide	12.34	374	374
Hydrogen	54.45	1660	1398
Ethane	1.50	249	224
Methane	19.95	1901	1708
Nitrogen	5.41	....	....
	100.00	4863	4846

(Continued on page 268)

Increasing Revenue by Decreasing Unaccounted-for Gas*

The various factors affecting the loss of gas from plant to consumer

Harry Ellis

Public Service Electric and Gas Company

INABILITY to account for all the gas made has been an accompaniment of the industry since its institution. For many years the difference between the "send out" as measured at the plant and the gas sold for a similar period, as registered by all the consumers' meters, was referred to as leakage, a term justly abhorred by the distribution engineers.

To facilitate comparisons of large and small companies, the street mains were computed to represent the mileage of equivalent 3-inch main and the standard expression in vogue was "Leakage per mile of 3-inch main." This procedure was based on the supposition that all leakage was proportional to the circumference of the joints, which was erroneous because no consideration was given to leaking services, inaccurate registration of meters, etc., nor was any distinction made between distribution and pumping mains.

However, it was not uncommon for the engineer to isolate a section of suspected main by the insertion of bags at intersecting streets, close all meter cocks along the affected section, and install a test meter on a by-pass, to determine the actual leakage of the main and services. Such practice was feasible, as gas was almost exclusively used for illumination.

Term "Leakage" Changed

In the course of time, factors other than leaking mains and services received more consideration, and the term "leakage" was supplanted by the more appropriate phrase "Unaccounted-for gas." Even this does not convey a comprehensive idea when expressed by percentage of send-out. For example: Consider a plant sending out 1,000,000 cu. ft. per year wherein the gas was correctly measured at the plant as well as by the consumers' meters, the actual leakage of the mains and services being 100,000 cu. ft., or 10 per cent. If the output is doubled, other factors remaining the same, the unaccounted-for gas becomes 5 per cent, yet no physical effort was made to reduce actual leakage.

However, considering conditions as existent, the various factors of "Unaccounted-for gas" may be segregated as follows:

1. Incorrect measurement of gas at the plant.
2. Leaking storage holders and connecting yard mains.
3. Difference between the corrected temperature of the gas at the plant and the temperature of the gas measured at the consumers' meters.
4. Condensation in the storage holders and the distribution system.
5. Tapping mains and purging mains and services.
6. Stolen gas.
7. Difference between period for which send-out and sales are computed.
8. Street lamps.
9. Blowing governor seals.
10. Leakage of street mains and services.
11. Slow and non-registering meters.

Correct Measurement of Gas Essential to Accuracy

1. Correct measurement of the gas at the plant is essential if accurate analysis of operation is desired.

2. Leakage or blowing of storage holders is negligible in view of the careful attention now given to such structures.

3. The difference between the corrected temperature of the gas as measured at the plant and the temperature of the gas as measured at the consumers' meters affects revenue, but is a condition that cannot be practically remedied.

Some years ago a large company operating in an adjacent state attempted to obtain the average temperature of the gas at the consumers' meters by shifting a large number of maximum and minimum thermometers from house to house daily throughout a year, which disclosed that the gas suffered a shrinkage exceeding 1 per cent.

4. Condensation in the distribution system is an important element of unaccounted-for gas and materially affects profits. Its occurence necessitates vast expenditures for pumping drips and caring for consumers' complaints of unsatisfactory service. Likewise, it has a deleterious effect on diaphragms, which tends to make meters run slow.

5. Gas lost by tapping mains and purging new mains and services is of minor importance and cannot be avoided.

6. The amount of gas stolen is probably considerable because it is usually taken in wholesale quantities. The more common methods employed are as follows:

How Gas Is Usually Stolen

A. Improvised connection to the head of the service, a bold and often hazardous effort between visitations of the meter reader.

---

* Presented at the annual mid-year meeting of the New Jersey Gas Association, Trenton, N. J., January 28, 1927.

B. Removal of the meter and the substitution of a space piece between visitations of the meter reader.

C. Reversal of the meter between visitations of the meter reader. Large capacity or "A" type meters only will pass gas without registration under such conditions.

D. Concealed loops or by-passes around the meter. Such methods may escape detection for years.

E. Driving a sharp instrument through the case to puncture the diaphragm.

F. Puncturing the case within the columns below the cones. Many jobs of this character, as well as the previous case, will escape detection until the meter finds its way to the shop.

G. Raising a valve by the skillful insertion of a wire through the outlet column into one of the forked channels. A vigilant fitter can detect such cases by examination after a test for non-registration. The similarity of wire found in many cases in one district of this company led to the belief that the trick was sold by some scoundrel.

In all the foregoing cases where the connections are tampered with periodically the piping and fittings will be more or less polished, or show tool abrasions, which should arouse the suspicions of meter readers as well as fitters. Rewarding employees for the detection of gas theft stimulates vigilance and is justifiable inasmuch as their investigations must be conducted at irregular hours and sometimes at the risk of sustaining personal injury.

When a gas company is fortunate enough to secure the conviction of a gas thief, newspaper publicity may haye an intimidatory influence on others who may be prone to steal gas.

Time of Send-Out and Compilation of Sales Affects Accuracy

7. Difference between the period for the computation of send-out and compilation of sales does not affect revenue, but obviously affects the accuracy of the resultant data, particularly for short periods.

8. Early lighting and late extinguishing of street lamps is responsible for a large amount of unaccounted-for gas, which can be reduced by automatic lighters. This phase of unaccounted-for gas is of diminishing significance with many of us, due to the displacement of gas lamps by electric lamps.

9. The blowing of governor seals is of increasing importance. Although the escapement of gas from the seal of a district governor is usually promptly rectified, there are a surprising number of house governor seals which intermittently emit gas during non-consumption periods.

10. No difficulty is experienced in installing a tight distribution system, but much difficulty arises in its preservation as such. Expansion and contraction resulting from variations of temperature, traffic shocks due to the increasing number of heavy auto trucks and excavations in the vicinity of gas pipes for the installation of other utilities, are responsible for most of the actual leakage. Broken cast iron mains are largely confined to 3-inch and 4-inch sizes, which, in addition to other circumstances, has impelled some companies to lay no cast iron mains less than 6 inches in diameter.

Value of Lead, Lead Wool and Cement Joints

Lead joints properly made have not contributed very much to leakage, excepting where such joints have been subjected to pressures in excess of normal distribution pressures. Leak clamps utilizing gaskets of various materials have not proved effective. Lead wool, by virtue of the fact that it is caulked from the first to the last strand, constitutes a compact joint which finds some advocates for its employment on pumping mains. Thirty-five years' employment of a cement has demonstrated its adaptability for joints on 4-inch and 6-inch mains regardless of pressures. Larger sizes have failed, particularly in connection with pumping mains. For such service some companies successfully use a composite joint of cement and lead in connection with a bell 6 inches deep without a lead groove.

Steel or wrought iron mains alone are adapted for pressures in excess of 10 pounds, but they lack the durability of cast iron pipe and are limited in size. Many so-called preservative coverings are such in name only, hence there is the imperative need of an efficacious and economically applied covering. News articles the past year furnish some hope by stating that manufacturers of steel pipe contemplated the production of material less subject to corrosion.

Wrought iron and steel are very susceptible to electrolysis and is frequently the cause of prolific leakage. Insulation and banding have not effected an absolute remedy.

Services are probably the source of more leakage than the rest of the underground system, due to a multitude of small leaks which escape observation for a long time. Special care to protect the exposed threads at fittings is very essential. Many engineers favor recessed fittings for such purpose. Secure support of the service at the main is necessary to avoid strains at the connection which tends to fail or break the main at the tap.

The policy of most companies to overhaul their underground structures in advance of improved pavements has done much to curtail actual leakage. Close observation of contractors employed on public work is necessary to avoid damage by grading machines, etc.

Slow Meters Seriously Affect Revenue

11. Slow and non-registering meters constitute the most serious effect on revenue, inasmuch as the gas has been manufactured and delivered, the loss being equal to the sales price of the gas not registered.

The practice of all companies to remove meters periodically for test and necessary repairs curtails

inaccurate registration of meters, but the maintenance of the proof after such periodical repairs is most desirable.

Care in handling the meters between the shop and the consumer's premises, and the conditions surrounding their location is, of course, important, but the greatest influence is attributable to condensation, which causes deterioration of the diaphragms. Thorough condensation and removal of impurities at the works will result in more accurate registration of meters and save a large amount of money otherwise needed for maintenance of meters.

In addition to affected diaphragms, a large number of meters do not record small quantities of gas as required for a pilot. Considering the almost universal application of pilots to appliances there is no doubt about such meters largely affecting unaccounted-for gas.

Many pre-payment meters develop into a non-registering state when resistance is offered to the closing of the shut-off valve which finally disengages the horizontal axle.

The bookkeepers, by close observation of the consumers' accounts, can frequently allocate suspected inaccurately registering meters, and initiate the procedure for a physical examination. Conversely, carelessness or over-zealousness will result in a large amount of unnecessary expenses.

Outline of Activities of the Technical Section, A. G. A., for the Year 1927*

Walter C. Beckjord

THE problems before the gas industry today are probably more far reaching and comprehensive in their scope than ever before in its history. Due to the gradual development of house heating the gas industry is now faced with peak loads which it has never had to cope with before. These may involve problems so large as to require radical changes in production and distribution of gas. The peak loads on the gas distribution systems in the past due to the overlapping of the gas lighting peak and the cooking and industrial loads, were relatively very large compared to the daily load curve, and possibly may have been greater proportionately than now or in future, but in total quantity of gas sendout during peak load, as compared to gas sendouts of today, and what the gas industry has to face in the future, the quantities involved were small, and the communities served were much smaller than today. The margin of reserve capacity was undoubtedly larger than it is today. This also brings up the problem of utilizing the capacity (during the off peak season) which is necessary to take care of these peak loads.

Important Committee Organized

There is also the question of very active competition of electricity, oil and coal in heat treatment processes. To give careful consideration to the problems of the gas industry and to answer these very important questions the Technical Section of the American Gas Association has organized a committee which is known as Economic and Engineering Survey Committee of the gas industry. The committee has organized various sub-committees to which the various detailed problems have been assigned and it is hoped that they will be in a position to present at least a progress report at the annual convention this fall. It is realized the task is tremendous and continuous involving constant study from every angle in order to keep up with constantly increasing demands, both present and future, but if the outstanding problems can be put up to the industry in a way that will concentrate the attention of the technical men and executives on the solution of these problems, much will have been accomplished.

Everyone is fairly familiar with developments in the electric industry alone the lines of the construction of super-power generating stations and high tension net works of transmission line all over the country. Much publicity has been given in the press lately about sending power from the Middle West, the Atlantic Seaboard, and on the Pacific Coast, for some years past power has been transmitted from the northern section of the country to the southern section by means of high tension lines.

All of these developments have been visualized because the transmission lines and large electric stations can be plainly seen by everyone. Intensive publicity campaigns have also emphasized these developments. In the gas industry, the transmission and distribution systems are buried underneath the ground, and the gas works construction has usually not been of a character to attract public attention to the extent the electric stations have.

High Pressure Distribution Must Be Considered

It would seem the gas industry may well profit by this example and consider seriously the high pressure distribution of gas from large gas works by which means a large supply of gas can be made available to small towns surrounding the large centers of population and also to intervening rural districts. This has been done for many years in natural gas fields in Pennsylvania, Ohio and Indiana, and also in the southwest portion of the United States and in the southern Pacific Coast region. Natural gas has been

* Address before the Gas Section of the Wisconsin Utilities Association, Racine, Wisconsin, February 24, 1927.

transmitted upwards of 300 miles and projects are now under way to transmit it from 400 to 500 miles. This involves large problems in distribution and repumping, but these problems have been met in a very satisfactory manner and there seems no reason why manufactured gas cannot be handled in a similar way if the economics of the situation permit.

There is one fundamental difference in the problem of the super-power electric generating station and the super-gas works, and that is, from our present knowledge the production of gas from coal involves the production of large quantities of by-products which must be disposed of in competition with commercial markets which markets are sometimes rather difficult to compete in, both as to quantity and price.

Considerable study has been given to complete carbonization methods, but so far there seems to be no method which can be adapted to gas works practice any better than a combination of coal gas and water gas plant and utilization of blue gas when lower B.t.u. standards permit in which overproduction of coke may be taken care of by making water gas should it become necessary. Coal gas production takes care of the base load and water gas the seasonal variations.

The international coal conference at Pittsburgh early this year, brought out some interesting discussions of the various processes which have to deal with the production of the lighter oils from coal, and ultimate complete gasification methods, but it would appear those problems are still very much in the development stage.

The Oil Problem

The industry has considered for some years the possibility of impending shortage of oil. This problem still seems to be one in which experts disagree, but it must be quite evident to any thinking person that the problem is one of serious consideration. Quantities of coal available can be computed because they are capable of measurement, but the quantities of oil available for future supply are not so easily measurable. New fields are being discovered but it is difficult to prognosticate the future. There has been considerable discussion on the possibility of using oil shale of which there are great quantities available in the West but there seems to be considerable difference of opinion as to the economic possibilities of its utilization at present prices. The time will undoubtedly come and it mav be nearer than we expect, when it will be absolutely necessary to use these deposits of shale. There are also tremendous deposits of lignite in the Dakotas and Texas and the western portion of the country. It may be that the present discoveries by Bergius and Fischer can be utilized in the future to procure oil from lignite deposits. These however, have yet to be applied as a commercial process.

The problems of the gas indutsry must be met right along, with the processes that are now available, but of course it is well to take cognizance of the future and attempt to develop our problems along lines that will permit economic competition with other fuels.

Gas Prices Must Be in Line With Other Fuel Costs

Gas is sold on strictly competitive basis to the industries and in order to compete with other fuels we must be able to produce gas and distribute it at a price that will be comparable with other fuels when efficiency of utilization is considered. The domestic consumer cannot of course produce gas fuel at a price that would compare with that which the utility can sell it to him and the total cost to him is a relatively small part of his total living expense, but the manufacturing industries must produce and sell in the competitive markets and the cost of fuel is a very important item in their costs, and they must be able to secure heat for process work at a price that will permit them to compete with other industries all over the country.

Relative Value of Gas Mixture Important

One of the most important problems that this committee is considering is that of relative value of mixture of gases. To this end a research committee has been organized and funds have been authorized to proceed with this research work at the American Gas Association laboratory at Cleveland. This work involves a study of gases of different B.t.u. value, probably starting from a range of 520 B.t.u. per cu. ft. down to 400 B.t.u. and possibly less. It also involves a study of the combination of the various mixtures of coal gas, carbureted water gas, blue gas, producer gas and natural gas, which may be necessary in various local situations, in order to take care of varying peak loads, particularly the house heating peak which is now facing the industry. It becomes necessary to have available during peak load periods large quantities of gas which can be mixed with the existing base load supply of gas in such a way as not to upset the specific gravity situation too much, for the continued readjustment of domestic appliances would cause greatly increased expense and much difficulty would result.

It is to this program that the research committee is now addressing itself and it is hoped that within two or three years very complete data will be available, showing just what can be done by different mixtures of gas involving various B.t.u. values, specific gravity changes, pressure variations, etc. This committee will be a fact finding committee and great care will be taken to determine the facts under all conditions. Much has been said of this problem, but so far no very definite efforts have been made to determine the facts.

You are all more or less familiar with what has been done in England and Canada in the way of supplying lower B.t.u. gas. In many parts of Canada now the B.t.u. standard is about 450 and apparently very satisfactory results have been obtained. It would seem that a very thorough effort should be made to determine what is economically right both for the consumer and for the industry and our effort should lead toward the solution of the problem.

Problems Due to By-Product Gases Being Used

In many of our larger cities a situation has developed where large industrial companies are producing quantities of by-product gas which they are selling to the local utilities for distribution. This source of supply is in many cases uniform, but at times is subject to seasonal variations. There is also available in some localities large quantities of natural gas which is more or less fluctuating in supply.

These problems bring out very forcibly the necessity for considering uniform specific gravity of gas mixtures and this is a factor that must have very serious study by the gas industry. The work of the research committee will develop of course toward the solution of these problems, and it is felt that a proper solution will enable the gas industry to enter into new fields in the application of its product to industry.

There are many problems of utilization now which require the most minute consideration. Gas makes an ideal fuel in many processes where uniform quality is absolutely mandatory, and that is a problem that the industry must solve. Uniformity of supply of course is always essential.

Elements Entering Into Cost of Production

In the application of heat to industrial processes, the relative cost of production must be considered. There are three elements in the cost of production:

1. The cost of money or investment cost.
2. Net cost of material including disposition of by-products.
3. Cost of labor.

All of these factors must be considered in their relative values, when considering the economics of any situation. The gas industry is in a very advantageous position when analyzed from the investment cost and efficiency basis.

Gas plants in which energy in gaseous form is produced from coal have an efficiency in many cases well above 75 per cent. Whereas, due to the basic limitations of utilization of steam through turbines exhausting into condensers the thermal efficiency of even the most modern generating stations is in the neighborhood of 20 per cent. Likewise the unit cost per unit of energy developed in electrical stations is considerably higher than the cost of equivalent energy in gas generating stations.

Intensive Development of Industrial Application of Gas of Pressing Moment

The problem immediately before the gas industry lies in intensive development of the industrial use of gas based on present day cost of gas in the holder. If this is accomplished gas can hold its own in competitive market in the future because the same economic conditions which govern the increase or decrease in cost of gas apply to a large extent to other fuels as well.

The ease of utilization must be considered however, which means that in many applications of electric energy in industry and general lighting, the convenience of electricity is so great as to offset all other considerations of cost and gas cannot well compete in some of those particular fields. There are fields where the relatively low cost of heat in gaseous form certainly gives it the advantage and it is up to the gas industry of today to find out just where those applications are and see that they are developed to the **utmost.**

Developments in compression and long distance transmission of manufactured gas have shown that its fields of application can be developed very materially and the gas industry can well emulate the wide range of activities of the electrical industry. It is hoped that the work of the economic survey committee will materially stimulate these developments.

It is difficult to encompass the entire range of problems of the gas industry in one short address or committee report, but if the way can be pointed out toward the solution of the outstanding problems of today this committee will have accomplished its purpose.

(To be concluded in an early issue)

¤ ¤ ¤ ¤

The Regulated Gas Oven was Unknown in Washington's Day
GAS SERVICE
Gas Offices
Atlantic Avenue 9834
Bedford Avenue 324
Court Street 348
Fifth Avenue 491
Fourth Avenue 4721
Fulton Street 1024
Fulton Street 2069
Myrtle Avenue 630
Myrtle Avenue 1381
Remsen Street 178
Flatbush Avenue 1034
Elmhurst
86 68 Queens Blvd.
Jamaica
8382 168nd Street
Springfield
Springfield Blvd.
& East Gate Plaza
ALLOWANCE SALE
The modern gas range equipped with oven heat regulator insures perfect cooking results. Turn in your old stove now and secure a cash allowance.
If desired, our liberal payment plan is available. Visit your Gas Office where our sales force will gladly help you to select the right range for your needs.
Telephone: TRIangle 7500
The Brooklyn Union Gas Company
Inconveniences of Colonial Days

As The Journal Views It

IT IS STILL BEING DONE

Some men are so provokingly successful in grasping their opportunities and getting ahead, largely due to the expenditure of liberal quantities of "elbow grease" that there ought to be a law against it. Or so some of our business extremists, who clamor direfully that the selfsame opportunities are tapering off to an alarming degree, might propose.

At frequently recurring intervals we are regaled by remarks from some men that intense competition and highly specialized effort in all lines of endeavor have just about killed off the youngster's chances for arriving somewhere near the top. Quite a decrepit thought, we fancy. The idea seems to be that unless one has considerable of a "pull" by way of some family connection or other "inside track" he will perforce be lost in the mad shuffle. Fiddlesticks! Pretty soon we will be told that Horatio Alger did not draw his characters from real life, or, mayhap, that Thomas Edison got his inspirations or ideas for his inventions from dreams.

There are a myriad of opportunities hovering around unchaperoned today. Our very diversified specialization in all lines of work brings in its train an ever-increasing host of chances for success. This is refreshingly so of the gas industry. As a proof of this assertion we refer our readers to the news columns of the current issue, wherein is briefly sketched the business careers of Messrs. Whitely and Morris of the Consolidated Gas Company of New York.

It seems that the rising generation is, of a verity, barking its shins in a mad scramble to dodge and hurdle its chances for success. Perhaps this is due to poor eyesight or then again it might be charged against our precipitous rush to "arrive" by some trick method. At any rate we somehow feel that Mr. Average Worker takes a satanic delight in booting and cuffing his opportunities about as though he might be combating a mediaeval plague. As a consequence, there is a dearth—and an apprehension provoking one too—of the proper men to man our various enterprises. If you doubt the accuracy of this statement kindly question any employer of the higher grades of help.

What is back of the matter then; this getting ahead? Why do not people grasp their opportunities and turn them to advantage? Psychoanalysts will, we presume, rant anent the subject of the state of one's liver and bring in other divers reasons as to why certain men get ahead and others fail. Such explanations carry us into uncharted seas of mental befuddlement. They lead to no satisfactory answer to the problem. Might we not suggest that far back, from the time of the ancients, people have been getting ahead and waxing prosperous largely due to what we might again inelegantly style "elbow grease"?

Will anyone be so brazen as to say that Messrs. Whitely and Morris had opportunity thrust upon them? Or, if you will, should their success be charged merely to brains and cunning? We do not believe so. We feel rather that they had the knack, elementary and simple, of hammering everlastingly at each task until they had consummated its correct solution and so to the next problem. But always was the never-failing output of "elbow grease" thrown into the conflict. These men were prodigious gluttons for work.

Of a verity, through the careers of Messrs. Morris and Whitely runs a thread of almost romance we might say. Here mustered the attributes of daring and determination, with a little of the gray matter thrown in. With them it was merely a matter of taking their job as it came to them; purely a case of digesting the "skimmed milk" as well as the cream. It was all a part of the game of holding down a job and holding it down according to established rules. They did not indulge in much hurdling of opportunities; they collared them forthwith and if more of the same were not in the immediate offing they proceeded to manufacture some.

Say what you will, regardless of those who bewail the passing of opportunities from our industrial picture, men are still forging to the top by their own sweat-of-the-brow efforts. With all due respect to those who claim otherwise, it is still being done.

CHANGEABILITY OF GAS IN MAINS

(Continued from page 261)

These differences lie within the realms of experimental error. The fact that there is a tendency for the calorific power of the gas to increase can be considered to be due to the fact that there has not yet been established a condition of perfect equilibrium in the gas, as taken at the first station. At any rate, it appeared necessary to repeat the tests and prolong them for a greater period.

The specific gravity and the effusion of the gas indicated that there were slight changes taking place in the composition of the gas.

Final Series of Tests

Hence a final and secondary series of tests was carried out. The duration of the test was extended to a period of six and one-third hours and the entire main between Zurich and Meilen was used in making the test. It was thus possible to increase the initial pressure on the average to 55 millimeters mercury. On the other hand, it was thought advisable not to make such an increase in the pressure, for the reason that the operating conditions would then be essentially different than those that existed in the first two series of experiments; and for this reason the results and conclusions that were obtained from this third and last series of experiments were directly applicable to the first two series.

This series of experiments yielded quite a different picture as far as the heating value of the gas was concerned. The differences in the heating values of the gas, something like fifteen, nine, fifty and thirty-one units, all fall within the realms of experimental error for the most part. There is always evident a tendency for the thermal value of the gas to be reduced, although the amount of the reduction is without practical significance. The changes in the thermal value, moreover, lie in the same direction and are partly of the same magnitude as the results of gas analysis shown in tabulation IV.

TABULATION IV. Secondary Test, Six Hours, 29 Minutes; Continuous Sample.

Constituent	Sample Taken Before the Blower. Percentage	Heating Value Max.	Heating Value Min.	Sample Taken After the Blower. Percentage	Heating Value Max.	Heating Value Min.	Sample Taken at the End of the Main. Percentage	Heating Value Max.	Heating Value Min.
CO_2	2.16	....	....	2.14	....	....	2.15	....	....
CnHm C_6H_6	1.00	344	330	0.91	313	300	0.86	296	284
CnHm C_2H_4	2.55	380	355	2.55	380	355	2.55	380	355
O_2	0.42	....	....	0.44	....	....	0.42	....	....
CO	9.53	289	289	9.37	284	284	9.45	287	287
H_2	53.40	1629	1372	53.57	1635	1377	53.77	1640	1381
CH_4	22.14	2109	1896	22.03	2099	1886	22.06	2102	1889
C_2H_6	1.50	249	224	1.50	249	224	1.50	249	224
N_2	7.30	....	....	7.49	....	....	7.24	....	....
	100.00	5000	4466	100.00	4960	4426	100.00	4954	4420

Hence it is not too far-fetched to say that there is a certain agreement between the two.

The specific gravity of the gas and its diffusion are subject to somewhat sudden changes, but, on the other hand, the changes are so small that they lie within the realms of experimental error. Hence the figures are of no great importance and indicate no significant change in these constants.

In order to show further that the loss in the heating value of the gas is only a small one, the following test was made to determine the decrease in the volume of the gas during the principal series of tests. This quantity could not be determined in the preliminary and secondary series of tests. The deposition of oil was also determined over a longer period of time.

Volume of Gas

In the first place, as far as the decrease in the volume of the gas was concerned, it was found that the volume measured at the beginning of the main was 787.7 cubic meters under standard conditions of pressure and temperature, viz., zero degrees C. and 760 millimeters of mercury, while that measured at the end of the main was 785.5 cubic meters under like conditions. This indicates a difference of 0.2 cubic meter or 0.025 per cent loss. It is thus evident that the quantity of gas delivered was practically the same as that sent into the main and hence there could have been no deposition of heavier hydrocarbons in the main during the travel of the gas through it. This fact agrees very well with the analytical results that have been given above in tabulation III. These results showed that the quantity or percentage of heavy hydrocarbons in the gas at the point where it entered the main was the same as that in the gas at the end of its travel.

Oil Deposition

An exhaustive test was also made on the separation of oil. This test lasted over a period of five weeks and the condensate was collected in seven siphons which were located in the blower house in the Zurich works. A total delivery of 115,800 cubic

(Continued on page 270)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

Lesson No. 160

Oil Gas

IN operating the single shell generator of the heat-up and make-down type, the end of the making period is marked by closing the make oil and steam valves as well as the valve that controls the flow of gas through the wash box. This means that all of the gas has been removed from the apparatus. The next step in the operation is to blow out the waste gases that remain in the apparatus. To do this air is blown through the generator entering at the bottom and passing up through the checkerbrick and out through the stack, the stack valve being opened. As has been mentioned before, the current of air passing through the checkerbrick enduces combustion of the carbonaceous matter that has been deposited on it and accordingly a considerable amount of heat is generated. After the air blast has continued for a suitable length of time, the stack valve and the blast valve are allowed to remain open and the apparatus is now ready for heating.

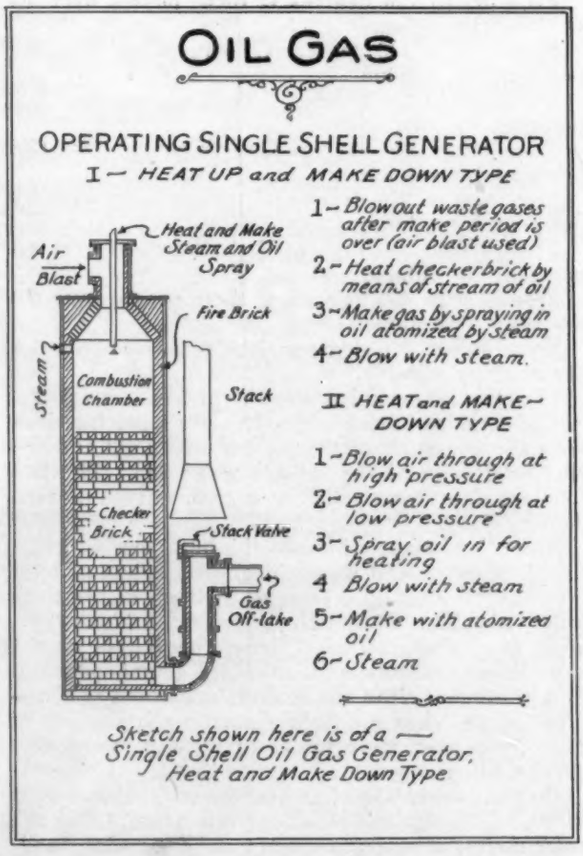
This is done by means of a stream of oil which enters at the bottom and is burned in the lower combustion chamber and thus raises the temperature of the brickwork. The heating is carried out long enough to bring the temperature up to 1600 degrees F.

Gas Making

Now the blast and stack valves are closed, the wash box valve is opened and oil in the state of an atomized stream is introduced with the steam at the top of the generator. The oil in passing down through the brickwork is converted into the state of permanent gases and lampblack. The gas is forced out of the apparatus by the continual flow of steam and oil into it and leaves the apparatus at the bottom, passing through the wash box. After a certain length of time has elapsed, the oil supply is shut off and steam is blown through the apparatus. The steam not only drives the gas out of the generator but it also reacts with the fine carbonaceous matter deposited on the hot checkerbrick with the formation of blue gas. The end of the process is again marked by shutting the steam and wash box valves and blowing air through the generator.

Heat and Make Down Generator

The operation of the single shell heat and make down generator is somewhat similar to that of the first type discussed. The first operation following the end of the gas make period is to blow air through the apparatus, first under high pressure to drive the gas out of it, and then under low pressure to burn the carbonaceous matter that has been deposited on the incandescent checkerbrick. Oil is then allowed to enter at the top of the apparatus, being sprayed by steam. Combustion takes place at the top of the apparatus, the products of combustion passing down through the checkerbrick and heating the same and finally passing out into the stack. Air and oil are then shut off, the stack valve is closed and the wash box valve opened, steam is admitted and allowed to


OIL GAS
OPERATING SINGLE SHELL GENERATOR
I — HEAT UP and MAKE DOWN TYPE
1 – Blow out waste gases after make period is over (air blast used)
2 – Heat checkerbrick by means of stream of oil
3 – Make gas by spraying in oil atomized by steam
4 – Blow with steam.
II HEAT and MAKE – DOWN TYPE
1 – Blow air through at high pressure
2 – Blow air through at low pressure
3 – Spray oil in for heating
4 Blow with steam
5 – Make with atomized oil
6 – Steam
Air Blast
Heat and Make Steam and Oil Spray
Fire Brick
Steam
Combustion Chamber
Stack
Checker Brick
Stack Valve
Gas Off-take
Sketch shown here is of a — Single Shell Oil Gas Generator, Heat and Make Down Type

react with the deposited carbon to form blue gas. This is a necessary operation for the checkerbrick is white hot and will cause too great decomposition of the oil hydrocarbons if they are allowed to come into contact with it. Following the steaming oil atomized by steam is blown into the apparatus, passes down through the partially cooled brickwork and is decomposed into permanent gases and lampblack. This period is then followed by another steaming of the apparatus to drive the gas out of it and also to react with the additional carbon deposited on the checkerbrick and thus make more blue gas.

¤ ¤ ¤ ¤

CHANGEABILITY OF GAS IN MAINS

(Continued from page 268)

meters of gas was noted and the deposit collected was sixty liters or kilograms of watery fluid and ninety liters or 89 kilograms (specific gravity 0.900) of oily liquid. The fractionation of the oil gave the following results:

From 80 to 120 degrees C there passed over 3.3 per cent by volume.

From 120 to 145 degrees C there passed over 6.4 per cent by volume.

From 145 to 170 degrees C there passed over 11.0 per cent by volume.

From 170 to 200 degrees C there passed over 13.8 per cent by volume.

From 200 to 230 degrees C there passed over 5.9 per cent by volume.

From 230 to 270 degrees C there passed over 3.3 per cent by volume.

From 270 to 300 degrees C there passed over 0.9 per cent by volume.

From 300 to 350 degrees C there passed over 1.5 per cent by volume.

The residue remaining was 53.9 per cent by volume.

The combined specific gravity of all the fractions with the exception of the residue was 0.863 and the specific gravity of the residue was 0.932. The last four fractions were solids at a temperature of zero degrees C.

According to the odor and the high specific gravity of the residue, it was evident that it was mineral oil or lubricating oil. Thus 53.35 liters of the total ninety-nine liters of the oily deposit or 49.6 kilograms were of this character. During the course of the experiment it was estimated that the actual consumption of mineral oil in the blowers amounted to forty-nine liters. Thus the light aromatic constituents of the oily deposit were found to be 89.0 minus 49.6 or 39.4 kilograms.

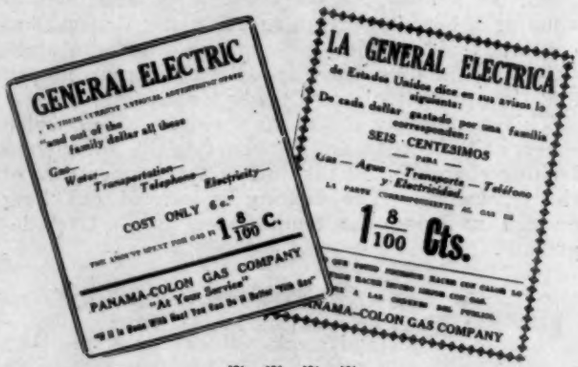
On the assumption of an average molecular weight of 90, 39.4 kilograms of oil correspond to 9.8 or ten cubic meters of steam in round numbers, under standard conditions of temperature and pressure, zero degrees C and 760 millimeters of mercury. This quantity was separated out from 103,300 cubic meters of gas, measured at zero degrees C and 760 millimeters of mercury. When approximately 10,000 calories as the maximum heat value for one kilogram of this oil are used in the calculations, then 394,000 heat units are obtained as the total heat loss distributed over 103,310 cubic meters of gas. This, then, makes not quite four calories per cubic meter of gas. It therefore follows that there is practically no loss of heating value in the gas when the deposition of oil is taken into consideration.

Conclusions

The following conclusions have thus been reached from this investigation. Errors easily creep into large scale experiments. Thus the heating values of the gas in the preliminary and principal experiments do not agree, in spite of the greatest care taken in making the measurements and in maintaining constant conditions. Not only is there no reason for an increase in the heating value of the gas after the blower, on the assumption, naturally, that a state of equilibrium has been attained, but the analytical results contradict such an increase. On the other hand, the secondary experiments were able to show an agreement between the heating value of the gas and other results. It must accordingly be assumed that there are practically no losses either in quantity or quality in distributing a rich mixed gas of 5,000 calories thermal value.

¤ ¤ ¤ ¤

ADVERTISING IN TROPIC COLON



¤ ¤ ¤ ¤

UTILITIES LEAD ALL OTHER INDUSTRIES IN TAXES

The Boston News Bureau recently published a graph which showed that out of every $100 of gross revenue earned by industry, mining, agriculture, banks and public utilities, including railroads in 1925, the following taxes were paid.

Manufacturers	$0.94
Mining	2.41
Agriculture	2.50
Banks	3.58
Public Utilities, including railroads	4.53

These figures do not include federal income and profit taxes.

The figures indicate that public utilities (side from the tax-free city-owned), paid in taxes $3.59 more of each $100 gross revenue than manufacturing; $2.12 more than mining; $2.03 more than agriculture and $0.95 more than banking.

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

A FIELD FOR SALES

One of the appliances which is not being pushed as hard by gas companies as it might be is the gas-heated clothes dryer, which is such a boon to women in rainy weather. The accompanying picture shows

a window of the Portland Gas & Coke Company in Portland, Oregon, which could not be surpassed for its exquisite cleanliness, accentuated by the variegated color effect of the different clothes hung over the racks.

✿ ✿ ✿ ✿

MAN ADVERTISEMENTS—"IF THIS BE TREASON!"

Now and then we have been requested to express an opinion as to the type of advertisement that is most likely to attract gas appliance salesmen. Not long ago the man in charge of a sales department told us that his man turn-over had reached a point where he was afraid the principals would soon ask for "an investigation." "I have tried all kinds of ads to attract the class of men that will stick, and some how or other they do not show up, and as a result we employ many men who are **not just what we want,** but who we hope we may be able to mould into our organization."

After we had been told this we made a little investigation on our own hook and found that what he had said was true; he had used many forms of want ads. and had employed many, many men and had had a big turn-over, one that was not only causing his company a direct loss in dollars and cents, chargeable to time employed in selecting and training men, but a terrific expense in loss of favorable public opinion by constantly having different "representatives" call on the customer.

This company pays about what the average company pays its outside men, and they are accorded about the same privileges—the whole trouble as we view it is that the men employed are not given the proper idea of just what the work is to be, what it holds out to a good man in future rewards and safety of position; in fact, the ads. seem to hold something back, they are too tame. On the other hand, it is our opinion if they would go right to the mat with their proposition they would attract a better class of men and they would hold them. What we mean by going right to the mat may well be illustrated by an advertisement used by P. F. Collier & Sons Company several years ago—it's a masterpiece, read it:

We Want a $100 a Week Man Who Doesn't Care What $30 a Week Men Think

WE want a man to do one of the biggest, most dignified jobs of selling in the United States. We will prove to him, by sales records, that many men are averaging $100 a week in the same work; and that some men are making, even in these times, more than $10,000 a year.

We want him to sell books. The books are the largest-advertised, fastest-selling sets in the United States. The leads furnished him will come, many of them, from the most prominent men and women in the city. He must be capable of dealing with big people. But most of all he must have backbone.

Occasionally a $30 clerk will refuse to see him because he is a "book-agent." We want a $100 a week man who *doesn't care what $30 men say or think.* A hard-hitting, clean-living man who wants to connect with an aggressive, growing concern — an organization which, if it once takes you in will stand behind you to the limit.

Write fully and frankly just what your selling experience has been; your letter will be treated in entire confidence. Address: General Sales Manager

P. F. COLLIER & SON COMPANY
417 WEST THIRTEENTH STREET, NEW YORK

An advertisement of that kind leaves nothing in doubt, the heading alone tells what is wanted: "We Want a $100 a Week Man Who Doesn't Care What $30 a Week Men Think"; you can't beat it, and that is just the kind of men the gas man wants, and that is one way he can get him.

"——an organization which, if it once takes you in, will stand behind you to the limit." That's the kind of an organization all men want to get into, and we do not recall at this moment a gas man who would have nerve enough to put such a statement into an advertisement for men and then not live up to it to the letter—and say! such a proposition would catch and hold some of these men **"who can sell the goods, but won't stick—the drifters"**—who, after all, don't stick when, in the majority of cases they get into the $100 a week class. Oh, well, they move on because something happened, maybe they were earning more money than the head porter and the drip-man, and that would never do.

¤ ¤ ¤ ¤

A NEW IDEA IN SALES MEETINGS

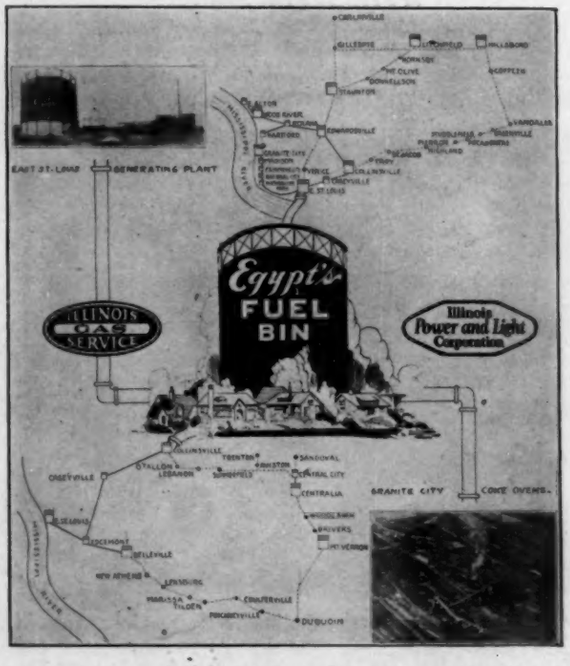
In the mid-west there is a gas company that is employing a new plan in connection with the daily sales meeting. These meetings instead of being conducted by the sales manager is conducted by the salesmen. They are held from eight to eight-thirty each morning of the week. All salesmen are permitted to conduct meetings. Each salesman district plans his own meeting and has full swing at it for a week. It is said that a lot of new ideas are developed in this way and that a lot of friendly competition is built up that materially increases sales and individual commissions.

This same organization also has a supper meeting of the entire sales department where various phases of the daily grind are frankly and freely discussed. This meeting is held after the evening closing hour—opening at 6 o'clock and closing at 7:30 each Tuesday evening. As soon as the accounting department has "cleared out" the home service department takes charge of the ledger tables and spreads upon them a light lunch: roast beef, buns, butter, pickles, with cake and coffee, in case of the last meeting. Those in attendance partaking, thus getting ready for the meeting, at which one of the members of the sales department "talks" on some particular subject of his own choosing. While these meetings have only been in progress for a few weeks it is agreed by all concerned that they are very profitable. That they are popular is evidenced by the increased attendance at each meeting. The meetings, by the way, are open to any and all employees of the company. "We will be glad to have you sit in if you think you can get anything out of our meetings" is the way the sales manager of the company issues verbal invitations. Of course, he is aware of the fact that what the employee "gets out" of the meetings will largely depend upon what he "puts into it" in the way of interest and goodfellowship.

¤ ¤ ¤ ¤

A NOVEL ADVERTISEMENT

The advertisement of the Illinois Power & Light Corporation reproduced here is one used in a booklet issued by the East St. Louis Chamber of Commerce telling of the advantages of this central industrial centre. This booklet is sent all over the United States and no doubt influences many manufacturers in the location of their plants. Gas service makes possible the development of any territory and gas company advertising of this kind helps sell the



idea of gas to the nation. This company also uses illuminated billboards to advertise gas service. These billboards are located on the most traveled state roads and advertise the use of gas without the signature of the company appearing upon them.

¤ ¤ ¤ ¤

JUST A SUGGESTION

Read the book. What book do you ask? Why the trade magazine. If you are employed in the gas business, for the love of Mike, think well enough of the industry to spend three iron men per twelve months to keep up-to-date. The trade magazine is "the book" to read. The trade magazine keeps you informed, tells you what others are doing, reports news of each and every phase of the business. Is especially helpful to the men who are responsible for the movement of merchandise.

MORE IN COLLEGE, FEWER AT WORK

Decline in number of persons in gainful occupations as compared with the population in recent years.

A DECLINE in the number of gainfully occupied persons in proportion to the total population in the United States occurred between 1910 and 1920, and a further decline from 1920 to 1925, according to a study of occupational distribution of the population made by the National Industrial Conference Board. Relatively larger school enrollment and college attendance and changes in immigration are among the chief factors accounting for the increased proportion of persons not gainfully occupied, according to the statistical analysis published in the "Conference Board Bulletin," a new monthly publication the first issue of which appears this month.

Less than four out of every ten persons in the United States in 1925 were working for a living. The other six either were living on the returns on their investments, or were being supported by others or at public expense. Whereas the gainfully occupied in 1910 numbered 38,167,336 persons or 41.5 per cent out of a total population of 91,972,266, there were 41,614,248 out of a total of 105,710,520, or 39.4 per cent so occupied in 1920. But for 1925, the gainfully occupied are estimated at 42,910,000, constituting only 37.2 per cent of the census—estimated total population of 115,378,000, as against 41.5 per cent in 1910. The 39.4 per cent gaintfully occupied of the 1920 United States population compares with 56.6 per cent gainfully employed in Germany in the same year, 44 per cent in Great Britain and Ireland, 53.5 per cent in France and 46.8 per cent in Italy. Of the more important industrial countries in Europe, only the Netherlands and Denmark recorded a lower proportion of gainfully employed than the United States for 1920, their number constituting 37.7 per cent of the total population in each of these two countries.

Big School Enrollment

Taking enrollment in schools, colleges and universities in the United States in 1920 as a measure, the number of pupils and students enrolled in the various educational institutions in 1925 exceeded that to be expected on basis of population increase by about one and a third million. This, according to the Conference Board's study, accounts for a large portion of the increased proportion of the not gainfully occupied. Immigration restriction, the analysis further shows, has resulted in a shift of the average age of the population, resulting in a larger proportion of aged persons, and has had similar influence upon the proportion of gainfully occupied adults.

A total of 72,470,000 persons, or 62.8 per cent of an estimated total population of 115,378,000 in 1925 either lived on income derived from investments or were supported by others, in the light of this study. The balance of the population is distributed in the following proportions in the various occupations: 29.9 per cent of all gainfully occupied in 1925 were in the manufacturing and mechanical industries; 7.6 per cent in transportation; 2.7 per cent in mining, and 24.5 per cent in agriculture. Non-industrial pursuits furnish a livelihood for 35.3 per cent of the population, 10.7 per cent being in trade, 8.9 per cent in clerical work, 1.8 per cent in public service, including military and naval service, 5.5 per cent in professional service, and 8.4 per cent in domestic and personal service.

Persons engaged in agriculture show a decided decrease, constituting 24.5 per cent of the gainfully occupied in 1925, as against 33.2 per cent enumerated in 1910, the year of the last pre-war census. The proportion of those in the manufacturing and mechanical industries, according to the analysis, has increased only slightly, from 27.8 per cent in 1910 to 29.9 per cent in 1925; miners and transportation workers likewise show a slight relative increase. Clerical workers nearly doubled their proportion to other workers, constituting 4.6 per cent of the gainfully occupied in 1910, and 8.9 per cent in 1925, the Board estimates. Those in trade, in public service and professional service have slightly increased in proportion to other groups of gainfully occupied, but a relative decline from 9.9 per cent to 8.4 per cent is estimated to have taken place in the proportion of domestic and personal servants to the total number of gainfully employed.—"Public Service Management."

☼ ☼ ☼ ☼

A GAS COMPANY'S SPRING OPENING

For weeks, beginning in March of last year, people entering the sales room of the Public Service Company of Colorado, Denver, were first amazed, then enthralled, by the sweet singing of many canaries. Suspended from the ceiling of the large sales room were twenty cages of canaries. The birds were rented from a bird store, which cared for them —no easy task, ladders being required.

The canaries were only one of several things carried out to supply spring "atmosphere." Tastefully placed throughout the sales room were palms and ferns.

A Gas Company's Spring Opening

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

SEPARATING HYDROCARBONS IN COAL GAS

FRACTIONAL distillation is an essential process in the analysis of gaseous hydrocarbons in coal gas, etc., because of the close similarity of the chemical composition of the hydrocarbons which makes chemical analysis unsatisfactory. Fractional distillation has been found to be especially useful in determining the composition of coal gas in analytical work of the Bureau of Mines. A method has been developed whereby the individual saturated and unsaturated hydrocarbons in coal gas can be accurately determined. It was found that the boiling point of the different hydrocarbons—methane, ethylene, ethane, propylene, proane, butylene and butane—mostly depends upon the number of carbon atoms contained in a molecule of the substance, and is affected very little by differences in structure and unsaturation. The method involves supplementing the usual Orsat analysis by fractional distillation, and can be applied to very small samples, only fifty to two thousand cubic centimeters of the gas being required.

¤ ¤ ¤ ¤

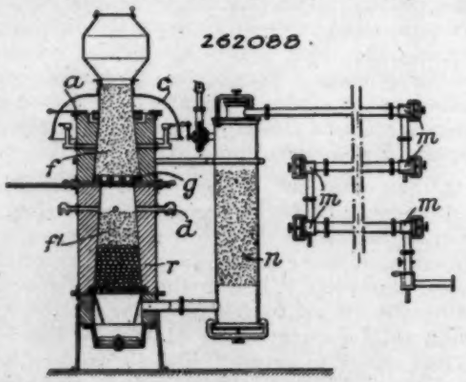
PATH OF TRAVEL OF GASES IN COKE OVEN

FROM a survey of the work done by various investigators on this subject it is concluded that after the first rapid coking of the coal adjoining the walls there is a change from a flow of gas towards the center of the oven to a dual flow in an outward and inward direction. The former increases as the plastic layer moves inward and as fissures are formed in the coke. The plastic layer acts as a partition wall, and two pressure-gradients are formed, one on either side of it. When the two plastic layers meet, a local high pressure results, and an outward flow occurs until the coke fissures in the center. Emphasis is laid on the size of coal carbonized, the plastic resistance decreasing as the size of coal particle is increased. A narrow oven is superior to the wide oven, as it presents too large a ratio of outward travel of the gases. Gas World, 1926, pages 128-133.

¤ ¤ ¤ ¤

WOOD GAS PRODUCER

A WOOD consuming gas producer has superposed fuel beds f and f^1 which are separated by a grate g which allows charcoal to fall into the lower fuel bed which reduces the tarry products and transforms the carbonic acid and water vapor from the combustion in the upper fuel bed into carbon monoxide, the reaction taking place on a pile of refractory balls r. The air for combustion is preheated in a bell c and enters through openings controllable at a. Automatic air intakes d carrying balls displaceable from the openings to the air, admit air when a sudden demand is made by the engine using

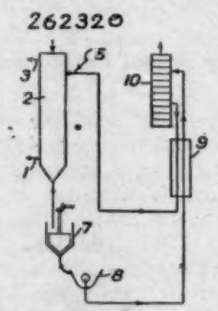


the gas. The producer gas passes through a dust filter n filled with iron shavings and then through a series of boxes m connected by pipes in which condensation takes place. British Patent No. 262,088.

¤ ¤ ¤ ¤

REVIVIFYING PURIFIER WASTE

DISTILLATION gases after removal of their ammonia content are freed from impurities such as sulphuretted hydrogen, carbon dioxide and hydrogen cyanide by scrubbing with aqueous ammonia and the fouled liquor is directly treated



with calcium sulphate whereby ammonium sulphate is produced. In the apparatus which is shown in the figure, the gas to be purified enters the scrubber at 2 at the point 1 and leaves at the point 3. Cold water which is introduced at the top of the scrubber meets gaseous ammonia which is supplied at the point 5 and after absorbing impurities from the gas is treated with ground calcium sulphate in a mixer 7. The liquor is filtered from calcium carbonate, etc., in the apparatus 8 and is passed to the regenerator 9 and still

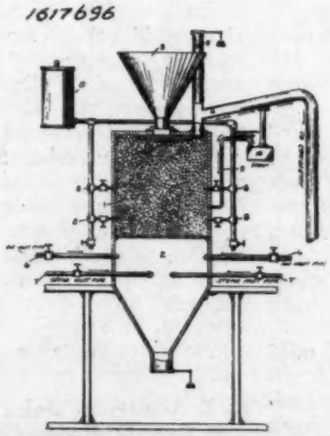
10 in which volatile salts are removed. The solution which not contains only ammonium sulphate is returned to the regenerator and thence to the scrubber being again charged with ammonia at the point 5. When sufficiently concentrated, the solution, possibly after carbonation is evaporated to obtain crystals of ammonium sulphate. British Patent No. 262,320.

☼ ☼ ☼ ☼

DISTILLING CARBONACEOUS MATTER

THE apparatus which is shown in the accompanying illustration has for its purpose the conversion of coal into liquid hydrocarbons. This is effected by distilling the carbonaceous matter

1617696



in the presence of sodium chloride, condensing the products of distillation and introducing fresh quantities of sodium chloride from time to time in order to accelerate the liquefaction of the coal. United States Patent No. 1,617,696.

☼ ☼ ☼ ☼

TESTS ON FUSION ROTARY RETORT

THE retort in question consists of a horizontally rotating drum, with a rated capacity of five tons per day, and may contain "breakers" which are intended to churn up the charge passing through the retort under its own head. It is fitted with a charging hopper, a discharging device, a "dust catcher" for the gas, which then passes through an exhauster and an oil scrubber to a holder and tar and liquor tanks. The retort is heated by the hot products of combustion from a furnace burning blast furnace coke. The temperature of the charge during the test probably did not exceed 550 degrees C. Cannel coal was used with a small mixture of bituminous coal. A throughput of nearly three and one-half tons per day was maintained. The yields of products per ton of coal were: coke, 11.6 hundredweight; tar and oils, 50.23 gallons; crude spirit from gas scrubbing, 3.75 gallons; refined spirit from tar, 2.7 gallons; 2,740 cubic feet of gas of 1,070 British Thermal Units per cubic foot. Dept. Sci. Ind., Res., 1926, 21 pages.

LOCAL GAS COMPANY GOOD BAROMETER OF BUSINESS CONDITIONS IN COMMUNITY

The local gas company is an accurate barometer of the economic condition of the community it serves and a prosperous gas utility is evidence of a prosperous and growing town, according to Alexander B. Macbeth, president of the American Gas Association.

"The relative prosperity of the individual and the average family is clearly apparent in the gas records of the local gas company," says Mr. Macbeth, who is quoted by the New Jersey Public Utility Information Committee. "The ability of people to pay for gas heat, gas-heated water, and other gas services is the real clue to their financial success and stability.

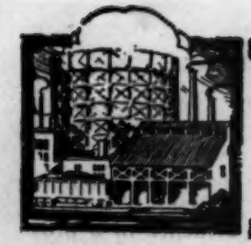
"Another proof that the gas company is a barometer of local conditions is found in the customer-ownership plan that so many gas companies have adopted. It is difficult to find a better means of gauging prosperity than by the amount of funds available for investment. When, as in customer-ownership, the funds come from a great many people, prosperity is general.

"When the average customer of a gas utility, the laborers, school teachers, professional and business men and women can invest their money in a utility, it is a sure sign that savings bank accounts are growing and that prosperity is the rule rather than the exception."

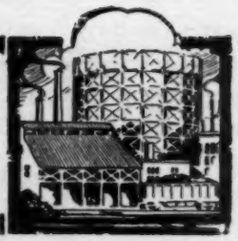
☼ ☼ ☼ ☼

TIMELY ADS BY THE CONSOLIDATED GAS CO. OF NEW YORK

Regulated HEAT for industry!
WHETHER it's a steam boiler, a melting furnace or an enameling oven, regulated Gas heat is a fuel economy which you cannot afford to be without.
ASK YOUR GAS COMPANY
mail the coupon!
Consolidated Gas Company of New York
130 East 15th Street, N. Y. C.
Room 1232:
Without obligation, please send me Booklet and complete information on the use of Gas Fuel for Industrial Heating.
(State line of business)
Name
Address
Sunshine HEAT
BETTER, even, than a trip to Palm Beach, is a Gas Radiant Heater in your own living room or fireplace. For the latest "period" models—
ASK YOUR GAS COMPANY
mail the coupon!
Consolidated Gas Company of New York
130 East 15th Street, N. Y. C.
Room 1232:
Without obligation, please send me your illustrated booklet of the new period model Gas Heaters.
Name
Address



NEWS OF THE GAS INDUSTRY



Western Gas Utilities Plan Big Improvement Expenditures in '27

Salt Lake City.—Returns from a questionnaire sent to gas utilities in the eleven Western states by "Western Gas," official publication of the Pacific Coast Gas Association, indicate that 1927 will be a period of continued prosperity for this industry in the West. A number of important expansion projects are under way, and Western gas company budgets for additions in 1927 will total in the neighborhood of $20,000,000.

Appropriations made by some of the major utilities for 1927 additions to gas service facilities, as revealed by the questionnaire in the February issue of "Western Gas," are Pacific Gas and Electric Company, San Francisco, $4,256,000; Los Angeles Gas and Electric Corporation, Los Angeles, $2,500,000; Southern Counties Gas Company, Los Angeles, $1,750,000; San Diego Consolidated Gas and Electrict Company, San Diego, $980,000; Portland Gas and Coke Company, Portland, Ore., $1,000,000; Public Service Company of Colorado, Denver, $1,000,000, and the recently organized Ventura Fuel Company has under way its $1,500,000 transmission line from Ventura to Los Angeles.

Other developments to be looked for in 1927 are the introduction of gas-fired refrigerators, which are now on production; the sale of gas-fired incinerators for domestic use, and a continued emphasis for house heating, in which Pacific coast gas companies have always been leaders.

Despite the unusually mild Western temperatures, which always affect gas sales adversely, the year 1926 witnessed an increased gas sendout by almost every gas company.

GAS PLANT PROGRESSES

Artificial Supply Promised By April First

Warsaw, N. Y.—The new artificial gas plant now under construction at Pavilion will be completed and ready for operation about April 1, according to Robert I. Thompson, general manager. This is about three months later than it was first hoped, but the difficulties of winter construction have delayed the work.

With the rapid drying up of natural gas wells, which is general in all the heavily used fields in this section, the new supply will be welcomed by all the users in the several towns served. Without an artificial supply it is said that gas would be exhausted as a heat unit in less than five years.

While the new rate has not yet been determined by the Public Service Commission, it is expected to be low enough to compete with coal and electricity in economy. The rate per thousand will probably be higher than at present, but the actual cost will not be in proportion because of the greater number of heat units in the artificial supply.

* * *

McKesson-Drake Bill Advances to Third Reading

Indianapolis.—Without comment, the Indiana house of representatives has advanced to third reading the McKesson-Drake bill, which would authorize municipalities, on vote of a majority of the electorate, to acquire, buy, lease, own or operate public utilities free from the control and jurisdiction of the Indiana public service commission and to issue bonds against such utility to effect the purchase.

Vicksburg Gas Co. Hold Annual Meeting

Vicksburg, Miss.—The annual meeting of the stockholders of the Vicksburg Gas Company was held recently and all the old officers and directors of the company were re-elected.

These are as follows: Neil Callahan, president; J. A. Hennessey, vice-president; Jesse F. Jones, secretary-treasurer. The directors are: George Williamson, J. A. Hennessey, P. L. Hennessey, Neil Callahan and Jesse F. Jones.

A report covering the activities of the company was submitted by Neil Callahan, president. The report contained much information relative to the history of the company and proved unusually interesting.

* * *

R. T. Armstrong Joins Sales Force of Geo. D. Roper Corporation

Rockford.—Mr. R. T. Armstrong has joined the sales organization of the Geo. D. Roper Corporation, with home headquarters in Pittsburgh. He will travel Western Pennsylvania and West Virginia.

Mr. Armstrong is well and favorably known to the trade in this territory, and his joining forces with the Roper organization should make Roper service more attractive than ever before to customers and the trade in this territory. Roper's progressiveness in bringing high class salesmen into their organization has been apparent heretofore, and is in line with their slogan, "Service First—Profit a By-product."

* * *

Financial Statement

Gross earnings of the Western United Gas and Electric Company for 1926 were $6,758,887, an increase of $714,834 over 1925. Net earnings were $3,125,499, a gain of $512,254.

W. Cullen Morris Elected Vice-President of Consolidated Gas Company of New York

On February 24, Mr. W. Cullen Morris was elected vice-president of the Consolidated Gas Company of New York. Mr. Morris' very interesting and successful career is given below.

Born in Jersey City, N. J., and after graduation from Stevens Institute of Technology with the degree of mechanical engineer in 1896 cast in his lot with the gas industry.

Mr. Morris has both successively and successfully held increasingly important positions with the New York and East River Gas Company and the New Amsterdam Gas Company. He became assistant engineer of manufacture of the Consolidated Gas Company of New York in 1905 and in 1907 was appointed engineer of construction of this company and the Astoria Light, Heat and Power Company.

From January, 1922, to date, Mr. Morris' career showed an inspiring upward trend, finally culminating in his present election to a vice-presidency of the Consolidated Company.

A cross section of his engineering and executive versatility is best shown by his handling of the construction of the Astoria tunnel, the erection of two water gas units at Astoria, the erection of the general office building, the maintenance of the various buildings of the company and during the world war his having charge of Government operations for the manufacture of carbon and soda lime for gas masks. He also co-operated with the Government in negotiations for the construction of toluol plants at Astoria for the recovery of toluol from commercial gas. Mr. Morris is a member of many engineering societies and will have direction of the building of Consolidated's new structure at 14th Street and Irving Place.

He will continue as chief engineer in addition to his new duties.

* * *

Canadian Gas Assn. Convention to Be Held in Toronto

Toronto.—The executive committee of the Canadian Gas Association have finally arranged to hold the 20th annual convention in the City of Toronto, Canada, Thursday and Friday, June 16 and 17, 1927.

The date set will appeal most favorably to the greater number of our members, and it is to be hoped that everyone will take advantage of the situation and help towards making the coming meeting one of the best in the history of the association.

The local entertainment committee will, without doubt, provide much in the way of an instructive and helpful, as well as an enjoyable program, while the papers section will not be behind when it comes to providing something worth while.

Convention Calendar

March

17-18—Illinois Gas Association. Annual convention, Springfield. R. V. Prather, secretary, Springfield, Ill.

April

4-5—American Gas Association. Distribution Conference of Technical Section, Baltimore, Md.

6—Pennsylvania Gas Association. Annual meeting, Bellevue-Stratford Hotel, Philadelphia, Pa. G. L. Cullen, secretary-treasurer, Harrisburg, Pa.

7-8—Eastern States Gas Conference. Annual meeting, Bellevue-Stratford Hotel, Philadelphia, Pa. J. Calhoun Smith, secretary, Reading, Pa.

7-8—New Jersey Gas Association. Annual meeting, Bellevue-Stratford Hotel, Philadelphia, Pa. Louis Stoker, secretary, Newark, N. J.

19-22—Southern Gas Association. Annual meeting, Biltmore Hotel, Atlanta, Ga. J. P. Connolly, secretary, 141 Meeting Street, Charleston, S. C.

20-22—Midwest Gas Association. Annual convention, The St. Paul, St. Paul, Minn. H. R. Sterrett, secretary, 551 Seventh Street, Des Moines, Iowa.

26-29—Southwestern Public Service Association. Annual meeting, New Orleans, La. E. N. Willis, secretary, 403 Slaughter Bldg., Dallas, Texas.

Consolidated Gas Company of New York Elects Benjamin Whitely to a Vice-Presidency

Mr. Benjamin Whitely, treasurer, was elected to a vice-presidency of the Consolidated Gas Company of New York on the 24th of February. Some of the high spots of Mr. Whitely's career are as follows:

Born in Baltimore County, Maryland, and educated in a private school in Baltimore. At the age of seventeen he entered the employ of the Pennsylvania Railroad Company. He next entered the service of a firm of coffee importers, and qualified as an expert accountant, and in 1890 entered the service of a railway construction company as auditor and subsequently became treasurer. Later, he became associated with various subsidiary companies of the Canadian Pacific Railway Company.

During the period from 1890 to 1900, Mr. Whitely was a director of the New Jersey Bridge Construction Company.

In 1900 he entered the service of the Consolidated Gas Company of New York as assistant controller, and in 1901 he was appointed treasurer of The United Electric Light and Power Company and the Brush Electric Illuminating Company.

In 1902 he was appointed assistant treasurer of the Consolidated Gas Company of New York, vice-president of The United Electric Light and Power Company and treasurer of The Standard Gas Light Company of the City of New York.

In 1920 Mr. Whitely was appointed treasurer of the Consolidated Gas Company of New York, and in 1925 treasurer of The Astoria Light, Heat and Power Company and the Tarrytown Terminal Corporation.

Mr. Whitely will still continue as treasurer.

* * *

Fire in Stove and Range Warehouse

Denver, Colo.—A fire in the warehouse of the Universal Store Company and Cribben & Sexton, February 10, at Denver, Colorado, destroyed about 500 stoves, ranges, both coal and gas, as well as some combination ranges and 15 tons of stove pipe.

U. G. I Contracting Company Activities

Atlantic City, N. J.—In addition to the contract for carburetted water gas apparatus recently contracted for by the Atlantic City Gas Company with the U. G. I. Contracting Company of Philadelphia, the latter company has been given the order to install a Smoot Accumulator and other auxiliary apparatus. The Smoot Accumulator will receive the exhaust steam from the various steam using units and deliver it for use in the carburetted water gas apparatus. This will effect very considerable steam economies.

Salisbury, Md.—The Citizens Gas Company of this city is planning an ambitious program of improvements to its plants and has commissioned the U. G. I. Contracting Company to do the work. Among the improvements to be made will be additional carburetted water gas apparatus, together with a U. G. I. High Duty Condenser, piping and other miscellaneous equipment.

Flushing, N. Y.—The New York & Queens Gas Company is preparing to equip its carburetted water gas apparatus for hydraulic operation and has placed the order with the U. G. I. Contracting Company for the installation. This method will do away with hand operation and enable the operator to manipulate the various valves from one central point.

* * *

Work Starts on Laying Gas Mains

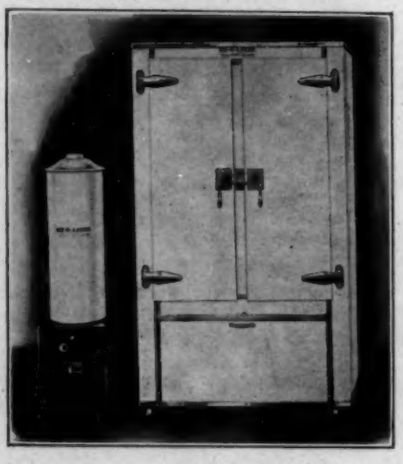
Northport, N. Y.—Actual work looking for the carrying of gas to Northport has been started by the Long Island Lighting Company. Men and machines are digging trenches and laying pipe at Deer Park. Under normal conditions about one mile of pipe a week can be laid, so that if such a pace is kept up "gas by summer" will be no idle boast. Officials of the lighting company have expressed the opinion that we will be able to "turn on the gas" by July 1.

Details as to the route the gas mains will take, the requirements to be met in "hooking on" and other points will be set forth in subsequent issues of this paper.

Ice-O-Lator Now in Homes

New Haven.—A gas operated domestic refrigerating set known as the Ice-O-Lator is now, after more than three years of operation in homes under regular observation, being offered to the public by the National Refrigerating Company, New Haven, Conn.

The Ice-O-Lator operates on the absorption system and therefore requires no motors or compressors. As a matter of fact, the Ice-O-Lator has no moving machinery of any kind. The basis of this application of the absorption system to domestic refrigeration is the use of a solid absorbent material, resulting in many advantages not inherent in water-absorption machines. The manufacturer presents figures to show a saving of at least half the operating cost over electrically actuated compression system machines, the figures being based on records covering three years of service. The absence of moving machinery in the Ice-O-Lator insures silent operation at all times and practically eliminates servicing.



Ice-O-Lator

The Ice-O-Lator consists of a refrigerating unit installed in the cabinet and a generating unit in the cellar or elsewhere.

The refrigerating unit carries trays for producing ice cubes. The generating unit requires only one square foot of floor area. An automatically controlled gas flame operates the generating unit.

The Ice-O-Lator is made for the National Refrigerating Company by the Winchester Repeating Arms Company. Ice-O-Lators of all required capacities are now coming through on a regular production schedule. A "school" for sales, installation and service men is maintained at the New Haven plant.

Cann Bill, Providing for Abolishment of Public Service Commission, Killed

Indianapolis.—The Indiana senate has killed the Cann bill, providing for the abolishment of the Indiana public service commission, the regulatory body for gas utilities and other public companies. The vote for killing the measure was 30 to 17 and followed an entire day of debate. Seventeen senators entered the debate. Seven of them urged the abolition of the commission.

Howard A. Cann of Frankfort, who introduced the measure, declared that the state administration defeated the bill and hinted that heavy campaign contributions by the utilities were responsible for the administration's action.

Many of the senators who voted against the bill said in their arguments that because there appeared to be much opposition to the present personnel of the commission and to its decisions, this was no real cause to abolish the regulatory form of management of public utility relations with civic government.

* * *

May Prove Splendid Market for Gas Appliances

The topography of the country abounding Alamosa, Colorado, is such that the bringing in of coal from the hills is a difficult proposition, but it is not to be inferred that there is now or has been any coal shortage; nothing of the kind. However, there is strong talk of the cities of Alamosa, MonteVista and surrounding towns getting natural gas and if it comes to pass it will mean the sale of a large quantity of gas appliances.

According to some of the citizens in the section, if they can get the gas they will use it for heating and all other purposes where heat is required.

Commission Authorizes Purchase of Common Stock of Western New York Utilities Company

Albany.—The Public Service Commission has authorized the Buffalo, Niagara and Eastern Power Corporation of Buffalo to acquire and hold all or more than ten per cent. of the outstanding common stock of the Western New York Utilities Co., Inc., upon the expressed condition that in granting the order the Commission does not pass upon the value of the property of the Western New York Utilities, Inc., nor upon the reasonableness of the consideration proposed to be paid for the stock, nor shall such consideration constitute any evidence in any proceeding, suit or of matter hereafter involving the value of the assets of the Western New York Utilities, Inc., or rates, charges or service of the company or its successors.

The Western New York Utilities, Inc., supplies gas in Albion and electricity in Batavia, Albion and Medina and various other municipalities in Erie, Genesee, Monroe, Niagara, Orleans and Wyoming counties; service given in territory contiguous to that served by the Niagara, Lockport and Ontario Power Company. More than 95 per cent. of the common stock of the latter company is now owned by the Buffalo, Niagara and Eastern Power Corporation.

It appeared at a public hearing before Commissioner Pooley in Buffalo that the Western New York company serves entirely Genesee and Orleans counties and parts of Monroe, Niagara, Wyoming and Erie counties; that properties controlled by the Buffalo, Niagara and Western corporation are on both sides of this territory and that the lines of the Niagara, Lockport and Ontario Power Company cross and partly parallel lines of the Western New York company; that the latter is the owner of some hydro-electric plants in Orleans county from which it generates a substantial amount of energy; that the utilities company distributes only Niagara power in Genesee county; that it does not use all the electric power which can be generated by its hydro-electric plants; that some six million kilowatt hours will be immediately available to the Niagara, Lockport and Ontario Power Company, and that certain power sites on the Old Orchard Creek can be further developed, resulting in additional power which can be used to good advantage by the Niagara company.

Commissioner Pooley in a memorandum by the Commission, says:

"In its consideration of this case the Commission has not attempted to place any valuation upon the property represented by the stock proposed to be acquired. The purchase price, however, appears to be high, but the Commission, as has been pointed out in previous cases, has been given no jurisdiction over holding companies. We may not substitute our judgment for that of officers and managers of the petitioners as to the wisdom of this transaction. They appear to have given the matter full consideration and to have come to the conclusion that by acquiring the control of this property and its co-ordination with the system now owned, economies will be effected that will not only be of profit to the public, but will justify their purchase of the property.

"The officers and directors of the petitioner have had great experience in the hydro-electrical developments of the state. The public will not be affected, except favorably, by this unified management."

The common stock to be acquired by the Buffalo, Niagara and Western Corporation consists of 27,500 shares, without par value, and the price to be paid is $200 a share.

Contracts Received By the Gas Machinery Company

The Gas Machinery Company of Cleveland, Ohio, are installing bench fillings at Milton, Pennsylvania; Bloomsburg, Pennsylvania; Connersville, Indiana; Amsterdam, New York, and Mobile, Alabama.

These bench fillings are with silica retorts and settings and are of the same standard design that the Gas Machinery Company has been furnishing since installing one of the first silica retort benches in the country in 1911.

The Ohio Gas Light and Coke Company of Bryan, Ohio, have awarded contract to the Gas Machinery Company for new purifying equipment, valves and connections.

This purifying equipment will be used in connection with the new by-product gas oven plant, which was installed in Bryan by the Gas Machinery Company last year.

* * *

Gas Purifying Materials Co., Inc., Opens New Yard in Providence

New York, N. Y.—On February 1, 1927 the Gas Purifying Materials Co., Inc., of Long Island City, N. Y., opened up a new yard in Providence, R. I.

The yard is at the foot of Crary Street and has a dock and railroad siding. Its size is the same as their yard in Long Island City, that is, approximately 200,000 square feet.

With the opening of this yard, the capacity for the manufacture of their products will be doubled.

They will produce the same Improved Iron Boring Oxide Sponge as they have been manufacturing for the past several years in their Long Island City yard.

The first shipment from the Providence yard will be made about April 15, 1927.

On January 1, 1927, the company which has been a co-partnership was incorporated and the officers are: Mr. Oliver H. Smith, president; Mr. Bernard D. Klein, treasurer and general manager, and Mr. R. L. Fletcher, assistant secretary. Mr. Fletcher is also engineer of their Providence plant.

Western Gas Construction Co. Awarded Contracts

Lincoln.—The Lincoln Public Service Company, Lincoln, Neb., have placed contract with The Western Gas Construction Company of Fort Wayne, Ind., for a Koppers type naphthalene absorption plant having a capacity of 4,000,000 cu. ft. of gas per day with 24-inch bypass.

The Lincoln Public Service Company have experienced considerable trouble with deposits of gum and have purchased the above apparatus for the elimination of all but one grain or less per 100 cu. ft.

Along with this installation will be installed eight stands of cooling coils for operation in conjunction with their present washer cooler.

Albion.—Contract has been awarded The Western Gas Construction Company, by the Albion Gas Light Company of Albion, Mich., for various gas plant equipment, consisting of a 300,000 cu. ft. gas holder, condenser, tar extractor, scrubber, exhauster, boiler and governor, also yard piping and bypasses for this equipment. This contract also covers the furnishing of the necessary buildings to house this equipment.

Ft. Dodge.—The Fort Dodge Gas & Electric Company have placed order with The Western Gas Construction Company for the installation of a washer cooler having a capacity of 50,000 cu. ft. per hour complete with necessary valves and fittings for gas bypass.

Utica.—The Utica Gas and Electric Company of Utica, New York, have placed their order with The Western Gas Construction Company for furnishing two 20,000 gallon oil storage tanks.

Theodore B. J. Merkt of Brooklyn Union Gas Co. Addresses Students of Brooklyn Technical High School

Brooklyn.—The romance in the study of iron, steel, brass, copper, tin, lead, aluminum and other metals encountered in our daily life, was the subject of a lecture before the students of Brooklyn Technical High School, 49 Flatbush Avenue extension. The talk was delivered by Theodore B. J. Merkt, M.E., industrial engineer of the Brooklyn Union Gas Company.

Mr. Merkt pointed out that when metals were subjected to various kinds of heating operations, they take on properties which make them greatly exceed in value their worth before heat treating.

He also pointed out that microscopic views of various metals, before and after heating and cooling processes, have become of such value that the manufacturer of articles made of these metals can be based upon such studies.

Mr. Merkt stated that present day demand for products of high quality, at a low cost, necessitates the most accurate and automatic control of processes in our manufacturing plants.

Illustrated slides showing microscopic views of various metals were displayed, as well as pictures taken in various Brooklyn plants and in other factories throughout the country. Descriptions of the operation in these plants were given showing the relation and value of accurate heat treatment of metals to the quality of the finished product. Some of the manufactured articles described were automobiles, tools, dies, wire, roller bearings, weighing machines and saws.

COUNCIL HOLDS FIRMLY TO GAS RATE ORDINANCE

Present Rates Kept Almost Intact

Des Moines, Ia.—Although anticipating objections from the Des Moines Gas Company against the new gas rate ordinance, introduced in the city council, the council will remain firm in its stand against increase of the rates beyond the concessions granted in the new ordinance, Mayor Hunter declared.

The council retained, almost intact, the present rates, but raised the fee for minimum service and lowered the B.t.u. requirement from 560 to 530. The gas company's request for a charge of 60 cents for the first 400 cubic feet in gas, which would mean a blanket increase of 14 cents in each bill, and for greater concessions to large consumers was refused.

There are only 3,500 consumers of gas who must pay the minimum bill each month, Mayor Hunter declared, and most of these are doctors or dentists or cigar stores. There are only about six consumers in the city that will benefit by the lowered rate for large consumers, he added.

"The city council is inclined to yield the two operating adjustments of the British thermal unit and the minimum charge, as a compromise, rather than engage in litigation costing many thousands of dollars and probably extending over a period of several years, with the outcome uncertain, especially in view of the more recent trend of the federal courts in fixing rates to be charged by utility companies," a statement by the mayor reads.

Neal Brewster Named to Fill Vacancy on Public Service Commission

Albany.—Governor Smith has sent to the Senate for confirmation the nomination of Neal Brewster of Syracuse, as a member of the Public Service Commission, to fill the vacancy caused by the expiration of term of Charles Van Voorhis.

Mr. Brewster was born at Weedsport, Cayuga County, N. Y., January 30, 1879. He graduated from Syracuse University in 1902 and was admitted to the bar the same year, since which time he had been engaged in the practice of law in Syracuse, being a member of the law firm of Lee, Brewster & Johnson.

Mr. Brewster is a trustee of Syracuse University and a member of the executive committee of the board of trustees; a director of the Syracuse Chamber of Commerce; first vice-president of the Onondaga County Bar Association; a trustee of St. Joseph's Hospital; a trustee of the Young Women's Christian Association, and a director of the Syracuse Trust Company.